

**U.S. Department of the Interior
Bureau of Land Management**

Big Springs Assessment

Black Use Area

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Bruneau Field Office
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Black Use Area

Livestock Management

Allotment and Pasture Boundaries

The BLM has designated Pasture 4 within Big Springs Allotment #0803 as the Joseph Black and Sons (JB&S) Use Area (Figure 1). In order to implement their Holistic Resource Management Biological Plan, JB & S divided Pasture 4 (1993) into a series of unfenced paddocks that serve as their boundaries for livestock herding. Paddocks are considered equivalent to pastures in this Assessment because their herding is generally effective as a means of controlling cattle distribution and timing of use. Each paddock has one or more water sources that serve as a means for holding cattle within it during the planned use period. Only three pastures within the entire JB&S Use Area are fenced or have physical barriers to livestock access. This allows for completely independent management, where the amount and timing of use can be controlled without herding or salting.

Pasture and paddock boundaries for the JB&S Use Area are shown on Figure 1. All A paddocks and part of the B paddocks are now within the Owyhee River Wilderness and a portion of the D paddocks are now within the Pole Creek Wilderness designated in 2009.

Season of Use, Grazing System, and Phenological Events

The permitted period of use is April 1 to October 31 with no additional season of use restrictions for pastures or paddocks within the Use Area. The actual season of use ends mid-July to mid-August in dry years due to the limited availability of water sources.

The existing permit does not specify a particular grazing system; however, Biological Plan Charts are prepared annually to coordinate the timing of use in each pasture or paddock. The Biological Plan for the JB&S Use Area reduces or prevents grazing during the same period in successive years, provides for more consistent regrowth after use, and prevents repetitive grazing during the critical growth period for perennial grasses. In some years, grazing occurs prior to the critical period, and in others, grazing occurs after it has passed. The duration of grazing is short (Table 1), with the main period of use in each paddock usually occurring within a few days. Some additional use may occur earlier or later as cattle are moved from paddock to paddock to follow the planned schedule. Rest has been occasionally provided.

The critical growth period for perennial grasses occurs during the late boot (heads showing) stage of development. Grazing during that time potentially has the greatest impact upon vigor and reproduction. Two phenological zones occur within the Joseph Black & Sons Use Area:

Late Spring Use Area (4,500 to 5,600 feet elevation)

The critical growth period for bluebunch wheatgrass (*Pseudoroegneria spicata*), Indian ricegrass (*Acnatherum hymenoides*), needle-and-thread (*Hesperostipa comata*), and Idaho fescue (*Festuca idahoensis*) occurs during late May (Figure 4 in the General Document). The critical growth period for Thurber needlegrass (*Acnatherum thurberianum*) was not defined by the phenological study, but is similar to that of Idaho fescue; although needlegrass tends to stay green later. The critical growth period for squirreltail (*Elymus elymoides*) occurs in mid-May. The critical growth period for Sandberg bluegrass (*Poa secunda*) occurs during early May.

Early Summer Use Area (5,600 to 6,132 feet elevation, 5,300 feet in Wagon Box Basin)

In the Early Summer Use Area, the critical growth period for bluebunch wheatgrass and Idaho fescue occurs during early to mid-June. The critical growth period for Thurber needlegrass is probably similar to

Idaho fescue. The critical growth period for squirreltail occurs during late May. The critical growth period for Sandberg bluegrass occurs primarily during May.

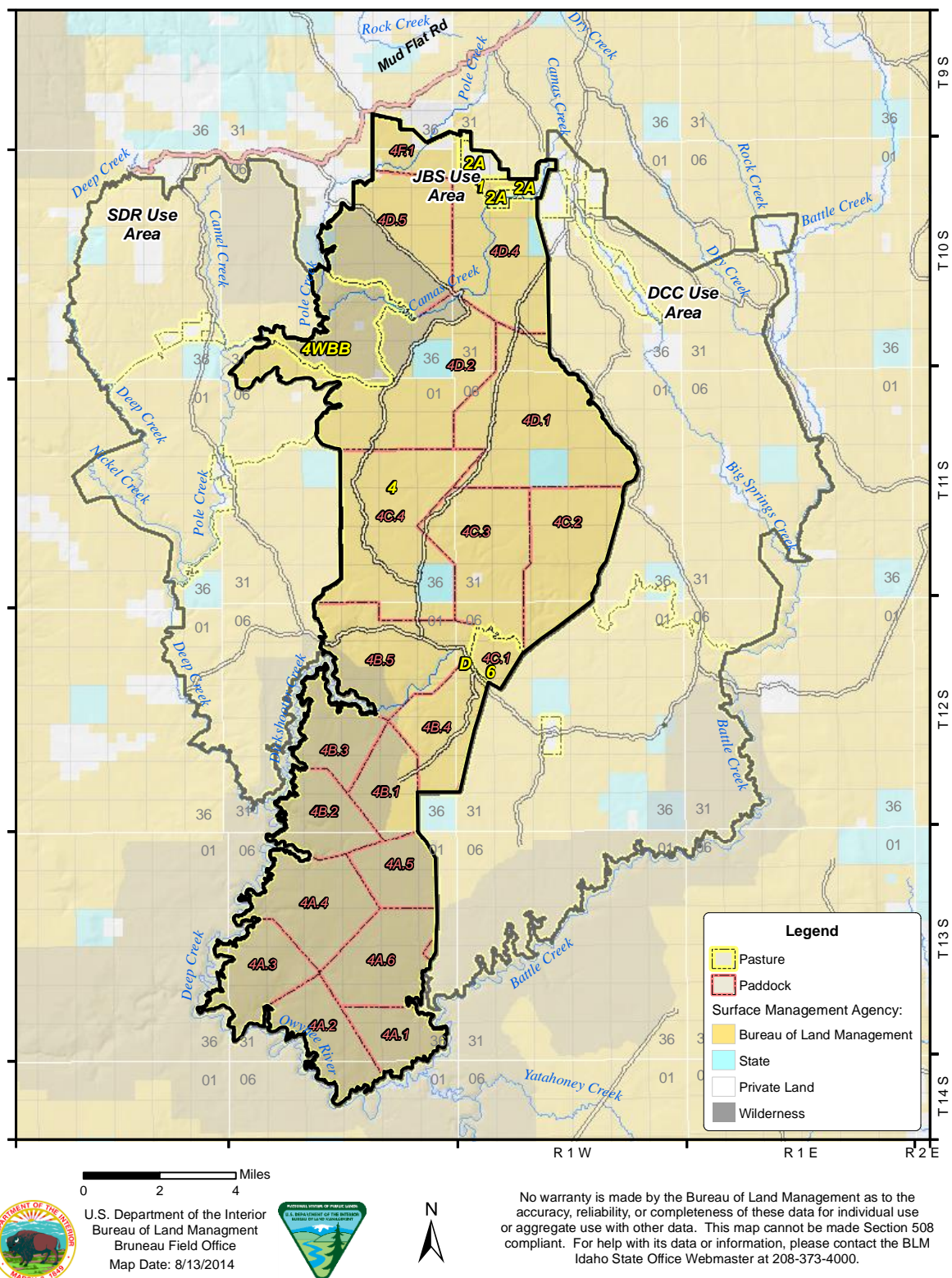


Figure 1. JBS Use Area.

Actual Use

For Pasture 4 as a whole (4-all), the total available AUMs were 4,559 (4,337 for public land and 222 Exchange-of-Use) through 2012. Total available AUMs were reduced to 3,914 AUMs in 2013; 645 AUMs associated with public lands within the Owyhee River Wilderness were sold and retired. Actual/licensed use ranged from 3,009 AUMs in 2003 to 4,691 AUMs in 1995, and averaged 4,307 AUMs between 1987 and 2012. More detailed information is summarized in Table 1 from supporting spreadsheets, billings, actual use reports and Biological Plan Charts in the Administrative Record.

Actual use was lowest during extended periods of drought, and higher during periods of above-normal precipitation. However, most of the authorized use was made in most years. In addition to the permitted use, 222 AUMs are currently allowed under an Exchange-of-Use Agreement for included private and State lands, for a total authorization of 4,559 AUMs through 2012. Nonuse of the federal permits (4,337 AUMs) for Pasture 4 averaged 30 AUMs (1%) from 1987 to 2012, but nonuse of the Exchange-of-Use allowance has been more consistent. Most authorized use is by cattle, however, a small herd of horses is kept in the Horse Pasture (Pasture 4C1).

The use periods for Pasture 4 as a whole, based upon actual use reports or bills, are shown in Table 1. Usually a few cattle are licensed through the summer and fall in case some are missed in gathering. Consequently, use periods are longer and total AUMs are slightly higher than those based upon the Biological Plan Charts alone.

The summary use periods for each group of paddocks as shown in Table 1 are simplified from the Biological Plan Charts and associated spreadsheets. They show the initial dates when cattle are turned in to any paddock in the group and the latest date when cattle herds are removed from any paddock in the group. Cattle are not necessarily present during the entire period within any of the group of paddocks. Livestock numbers shown in Table 1 are a maximum, usually occurring on days when the Biological Plan Charts showed that all authorized cattle or horses were in a single paddock.

Actual use (AUMs) in each paddock and group of paddocks (A, B, C, D) is approximated, since the herd size reported on the official actual use form is often split among several paddocks on any given day. The exact numbers actually present in each paddock are defined neither by the Biological Plan Chart nor by the official actual use form. The sum of these estimates of actual use for all paddocks together based on the Biological Plan Charts in Table 1 therefore may not agree exactly with the total active use for Pasture 4 as a whole.

Table 1. Actual/Licensed Livestock Use, Paddocks 4A1-4A6, 4B1-4B5, 4C2-4C4, 4D1-4D5 and entire Use Area (4-all), JB&S Use Area, Big Springs Allotment.

Pasture	A			B			C			D			4-all		
Year	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period
1987											0		3987	1200	3/20-9/01
1988											0		3702	1341	4/1-9/15
1989											0		4376	2338	4/1-7/30
1990											0		4365	2230	4/1-7/30
1991											0		3171	2856	4/1-10/31
1992											0		4370	1440	4/1-10/31
1993	1572	1428	4/17-5/26	1648	1428	4/8-6/20	713	1428	4/18-7/6	403	1393	7/1-7/24	4382	1434	4/8-7/24
1994	1380	1398	4/21-5/20	1214	1398	4/1-5/29	654	1398	4/18-6/17	1201	1398	6/8-7/10	4408	1403	4/1-10/31
1995	1479	1499	4/15-5/14	1402	1499	4/8 - 6/8	656	749	4/15-6/23	764	1499	6/20-7/13	4691	1499	4/8 - 10/1
1996	1509	1485	5/5-6/4	1631	1485	4/13-6/16	497	1485	4/13-7/12	633	1485	6/24-7/12	4258	1485	4/13-10/1
1997	1732	1959	4/15-5/13	1318	1959	4/09 - 5/28	599	1959	4/21-6/06	984	1959	6/6-6/21	4558	1959	4/10 - 10/31
1998	1832	1505	5/6-6/12	1895	1505	4/13 - 6/30	595	1505	6/30-7/11	199	1505	7/12-7/16	4506	1505	4/14 - 10/5
1999	1526	1452	4/29-5/31	1573	1452	4/19-6/25	750	1459	4/14-7/8	812	1452	7/5-7/23	4464	1459	4/16 - 7/26
2000	883	1412	5/26-6/13	1787	1412	4/16-5/25	670	1419	4/10-7/4	1069	1412	6/17-7/15	4558	1419	4/18 - 10/1

Pasture	A			B			C			D			4-all		
Year	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period
2001	1610	1504	4/7-5/16	1049	1504	4/6-6/5	904	1504	4/5-7/8	787	1504	6/23-7/14	4494	1513	4/5 - 7/14
2002	1829	1543	4/15-5/25	1274	1543	4/13-6/18	579	1552	4/11-6/30	686	1543	6/28-7/16	4384	1552	4/13 -7/16
2003	0	0		0	0		0	0		0			3009	932	4/3-10/31
2004	0	0		0	0		0	0		0			4410	1925	4/2-8/17
2005	1768	1060	4/12-6/10	996	1060	4/4-7/8	755	1060	4/2-7/31	660	1060	4/24-8/25	4616	1060	4/4-10/31
2006	1242	880	4/29-6/22	515	880	4/26-7/10	725	880	5/1-8/7	1817	680	5/26-10/31	4273	880	4/27-10/31
2007	0			0			0			0			4407	1128	4/1-9/15
2008	0			0			0			0			4566	1185	4/20-10/31
2009	0			0			0			0			4556	1106	4/21-10/31
2010	0			0			0			0			4558	1070	4/22-10/31
2011	0			0			0			0			4562	1087	5/3-10/31
2012	0			0			0			0			4351	962	4/5-10/31
2013	0			0			0			0			3119	761	4/2-8/20,9/16-10/31
Avg 1987-1992													3995	Ave. 1987-1992	

Pasture	A			B			C			D			4-all		
Year	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUM s	Max# LVST	Use Period	AUMs	Max# LVST	Use Period	AUMs	Max# LVST	Use Period
Avg 1993- 2013	1312			1164			578			715			4340	Ave. 1993- 2013	Adoption of Holistic Range Management

Pasture 4, Overall Stocking Rates

Stocking rates vary substantially in each paddock or pasture from year to year. Maximum stocking rates are somewhat greater in the A and B paddocks than in the C and D paddocks, but overall, are lightly stocked in most paddocks in most years. The heaviest paddock stocking rates have been about 3.6 acres/AUM, but these have seldom been imposed. Most of the heavier stocking rates are in the 7 to 9 acres/AUM range in the A and B paddocks and in the 9 to 11 acres/AUM range in the C paddocks. Individual paddocks are stocked at well over 20 acres/AUM in many years. These stocking rates are not reported in Table 1, but were calculated by the spreadsheet from the associated Biological Plan Charts summarized by Table 1.

Utilization and Use Pattern Mapping

Pasture 4, A Paddocks (Early-Mid Spring Rotation)

Use Pattern Mapping is available for the A Paddocks for 2000, 2005, and 2006 (Figure 2). Figure 2 reveals that the majority of these paddocks consistently receive no use and that cattle concentrate on fine-soiled, non-stony areas. Loamy, various riparian, and non-stony Shallow Claypan ecological sites predominate on preferred portions of the landscape. Low mounds of fine soil that support low sagebrush communities occupy substantial areas within these paddocks, and are intermingled with basin and Wyoming big sagebrush communities along the top of Dickshooter Ridge near Wiley, Kincaid, and Justo Reservoirs. Portions of intermittent stream terraces are also non-stony, and are also preferred by cattle. Water may also be available from pools or in small wet meadows associated with springs that occur at intervals along intermittent stream channels, particularly in April and May. Few cattle access the canyons of Deep Creek or the Owyhee River from these paddocks under April or May use.

Overall utilization in paddocks 4A1 to 4A6 was 13% in 2000. Water was generally available from reservoirs, springs, or intermittent streams. The utilization pattern reflected the paddocks that were planned for use in 2000, with greater utilization detectable in areas with higher stocking rates. Utilization in 2000 was practically nil over much of paddocks 4A1 to 4A6, particularly on top of Dickshooter Ridge and in stony low sagebrush areas. A substantial area of light use occurred on fine soils near Dead Tree and Rocky Point Reservoirs in paddock 4A2; with a smaller area of moderate use in paddock 4A1 near Wiley Reservoir. Substantial areas of heavy use occurred on fine-soiled big sagebrush areas in paddock 4A4 near Kincaid Reservoir and in paddock 4A5 near Justo Reservoir. Use was also locally heavy along some intermittent drainages near water. However, Figure 2 over-generalizes the amount of heavy use that occurred because utilization was nil where drainages were stony and where green vegetation was scarce. Regrowth can be abundant on wet meadows. Little use by livestock occurred in the Owyhee River and Deep Creek canyons.

Overall utilization in the portions of paddocks 4A1 to 4A6 checked was 3% in 2005. 2005 was an excellent water year; water was well distributed in reservoirs, springs, and intermittent streams, and persisted later. In areas checked, the utilization pattern again reflected the planned use for 2005; with greater utilization detectable in areas with higher stocking densities and no use detected in Paddock 4A5, which was planned for rest. Planned use occurred earlier, and the overall stocking rate was greater than in 2000. In 2005, utilization was lighter in preferred portions of the landscape than in 2000. Regrowth was good on hydric species at springs and reservoirs.

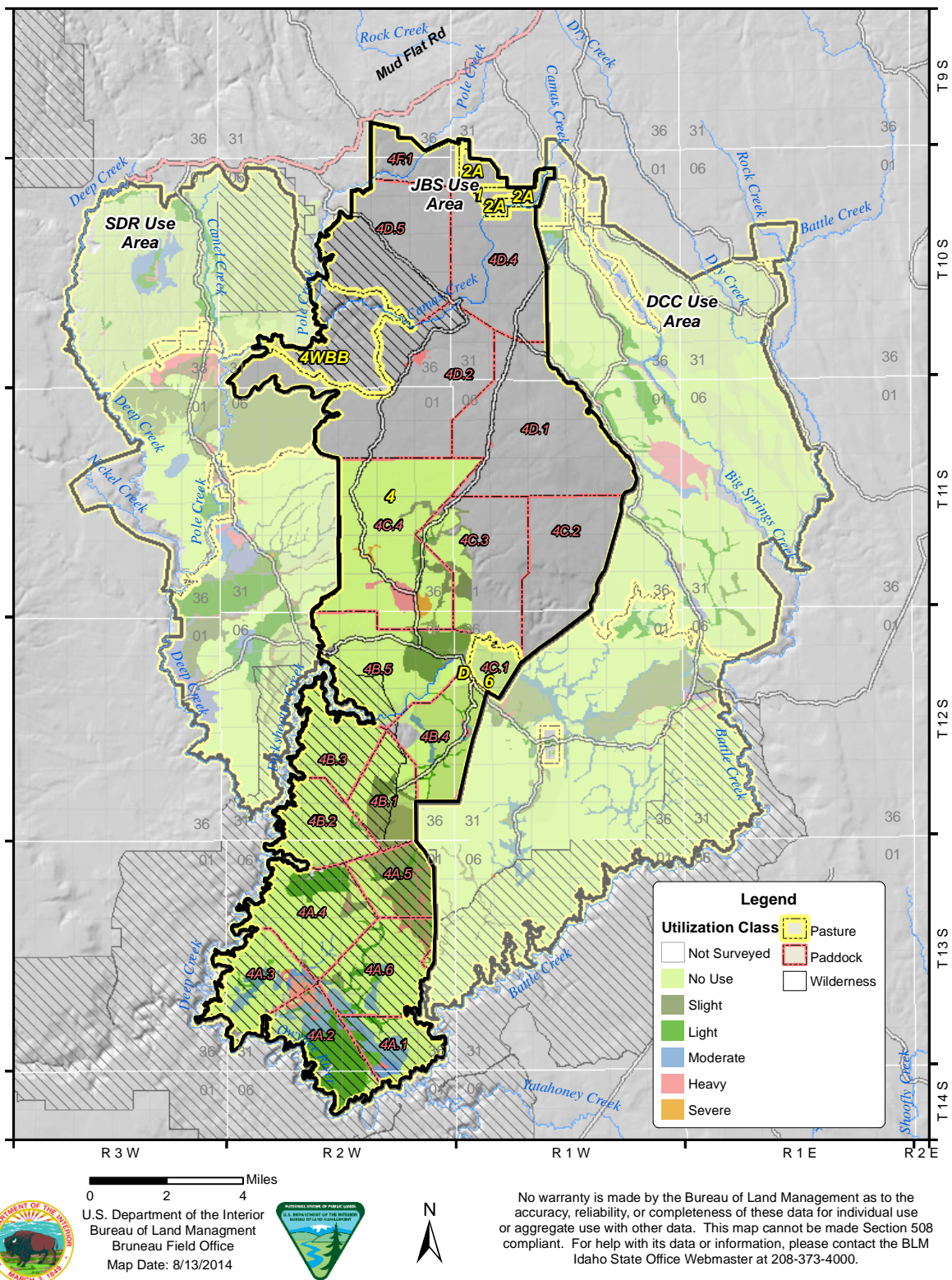


Figure 2. Use Pattern for the JBS Use Area.

Overall utilization in paddocks 4A1 to 4A6 was 16% in 2006. 2006 was also an excellent water year; water was well distributed in reservoirs, springs, and intermittent streams, but dried up earlier in some cases due to the onset of sustained hot weather in July. Turnout was delayed until April 29, and the overall stocking rate was less than in 2005 but more than in 2000. The utilization pattern reflected the planned use for 2006, with greater utilization detectable in areas with higher stocking densities and almost no use detected in Paddock 4A5, which was again planned for rest. Utilization was locally heavy around Kincaid and White Rock Reservoirs and at the wet meadow in Old Stove Draw. Regrowth was good on wet meadows. Utilization was moderate on fine-soiled low and big sagebrush communities in the key area that extends from White Rock Reservoir to Wiley Reservoir in paddocks 4A1, 4A2, and 4A3 and light closer to the Owyhee River canyon. Another area of light utilization occurred in the preferred area around Kincaid Reservoir.

Pasture 4, B Paddocks (Mid Spring Rotation)

Use Pattern Mapping is available for the B Paddocks for 2000, 2005, and 2006 (Figure 2). Figure 2 reveals that the majority of these paddocks consistently receive slight or no use and that cattle concentrate on fine-soiled, non-stony areas; predominantly on Loamy, various riparian, and non-stony Shallow Claypan ecological sites. Within paddocks 4B1, 4B2, and 4B3, low mounds of fine soil occupy substantial areas that support low sagebrush communities intermingled with basin big sagebrush communities. Portions of intermittent stream terraces are also non-stony, and also preferred by cattle. Water is usually available in April and May from pools or in small wet meadows associated with springs that occur at intervals along intermittent stream channels, particularly along Dickshooter Creek and its tributaries. Black Canyon, Joe's, Sleepy, and Justo reservoirs impound seasonal runoff in intermittent drainages; while Dickshooter and Anticipation reservoirs capture spring flow and provide reliable water after the typical April and May use period. Cattle have poor access to the Black Canyon portion of Dickshooter Creek.

Overall utilization in paddocks 4B1 to 4B5 was 13% in 2000. Water was generally available from reservoirs, springs, or intermittent streams. The 2000 utilization pattern reflected the planned use in paddocks, with greater utilization detectable in paddocks planned for higher stocking densities. Utilization in 2000 was practically nil over much of paddocks 4B1, 4B4, and 4B5, particularly in stony low sagebrush areas. Utilization was heavier in areas where fine soils predominated. Areas of heavy use on fine-soiled big sagebrush areas in paddocks 4B1 and 4B2 were contiguous to those near Justo Reservoir in paddock 4A5. Use was locally heavy along some intermittent tributaries of Dickshooter Creek where green vegetation occurred. However, Figure 2 over-generalizes the amount of heavy use that occurred along drainages because utilization was nil where drainages were stony and where green vegetation was scarce.

Overall utilization in paddocks 4B1 to 4B5 was 7% in 2005. 2005 was an excellent water year; water was well distributed in reservoirs, springs, or intermittent streams. The overall stocking rate was less than in 2000, and planned use occurred later. The utilization pattern reflected the paddocks that were planned for use in 2005, but utilization was slight or nil even in preferred areas. Very small areas of heavy use occurred at Black Canyon, Joe's and Anticipation Reservoirs. Regrowth was good on hydric species at springs and reservoirs.

Overall utilization in paddocks 4B1 to 4B5 was 6% in 2006. 2006 was also an excellent water year; water was well distributed in reservoirs, springs, and intermittent streams, but dried up earlier in runoff-dependent reservoirs due to the onset of sustained hot weather in July. Planned use occurred later, and the overall stocking rate in paddocks 4B1 to 4B5 was less than in 2000 or 2005. The utilization pattern reflected the paddocks that were planned for use in 2006, but utilization was again slight or nil even in most preferred areas. Utilization in 2006 was moderate rather than light (as in 2005) in some intermittent drainages tributary to Dickshooter Creek.

Pasture 4, C Paddocks (Late Spring Rotation)

Limited Use Pattern Mapping is available for the C Paddocks for 2000 and 2005 (Figure 2). Most of paddocks 4C2 and 4C3 were not checked in 2000 and 2005; and Pasture 4C1 was not checked in 2005; consequently, overall utilization in the C paddocks cannot be computed. Figure 1 reveals that the majority of the surveyed areas within these paddocks consistently receive no use. The paddocks are exceptionally stony, and cattle concentrate on fine-soiled, non-stony areas in closed basins, and on stream terraces, tableland escarpments, and adjoining toeslopes. Churning Clay, Clayey, Loamy, Clay Seep, and riparian ecological sites predominate on those preferred portions of the landscape, particularly if water is available. School Section Reservoir impounds seasonal runoff in an intermittent drainage within the largest closed basin and serves as the focal point for livestock use in Paddock 4C4. Several undeveloped springs are the major water sources in Paddock 4C3. Dickshooter Creek provides seasonal water within Pasture 4C1.

In 2000, water was generally available from School Section Reservoir, locally along Bull Gulch, other intermittent drainages, or at the undeveloped springs within paddocks 4C2 to 4C4. Fine-soiled areas were differentiated from stony areas on the 2000 Use Pattern Map. Utilization was heavy or severe in areas where fine soils predominated. The predominantly stony areas generally received little or no use by livestock.

2005 was an excellent water year; water was well distributed. The utilization pattern was similar to 2000, with very little use detectable even in preferred areas. 2006 was also an excellent water year, but dried up earlier in runoff-dependent reservoirs due to the onset of sustained hot weather in July.

Pasture 4, D Paddocks and Wagon Box Basin (Early Summer Rotation)

No Use Pattern Mapping is available for the D Paddocks for 2000, 2005, or 2006 (Figure 2). Although a few of the fine-soiled areas were differentiated on the Use Pattern Maps, the majority of these paddocks were not checked or rated after the period of use. Consequently, overall utilization in paddocks 4D1 to 4D5 cannot be formally evaluated. However, observations indicate that the landscape components and cattle preferences are very similar to those previously described for the C paddocks. In Paddocks 4D1 and 4D2, reservoirs that collect runoff are the primary water sources. Paddocks 4D4 and 4D5 are bordered by Camas Creek, which provides the primary water source. In dry years, water is available only in potholes along the channel near the road crossing, with no flow occurring. The upper portions of Camas Creek are ephemeral because they are diverted for irrigation upstream, and are supplemented by upland reservoirs that impound seasonal runoff in intermittent drainages or on the floors of closed basins. Springs are the primary water source in Pasture 4D3, because access is limited to Pole and Camas Creeks within their canyons.

In 2000, livestock distribution was generally associated with fine-soiled areas near reservoirs or springs within paddocks 4D1 to 4D5. Paddocks 4D1, 4D2, 4D4, and 4D5 are exceptionally stony, and the less rocky areas, particularly if water is available, were used preferentially. Utilization was heavy or severe in surveyed areas where fine soils predominated. The predominantly stony areas generally received little or no use by livestock. Pasture 4D3 (WBB) and paddock 4F1 are less stony and better watered, but were not checked in 2000. In 2005 and 2006, photos were taken of selected areas that can be used to judge utilization, but no data were collected.

Standard 1: Watersheds

Pasture 4, A Paddocks (Early – Mid Spring Use)

Rangeland Health Evaluation

A total of nine Rangeland Health Evaluations were completed in the A paddocks between June 8 and September 13, 2004. The A paddocks are dominated by Claypan ecological sites, with Loamy inclusions.

Many of the Claypan sites have stony to extremely stony or gravelly surfaces which aid in protecting them from disturbance. Some Claypan stands have lower production potential (concave intermound) and species typical of shallower and drier sites are more prominent (Sandberg bluegrass, Thurber needlegrass). Convex intermound Claypan stands have slightly deeper soils and support the dominant species from the site guides. Low mound Claypan soils are deeper still, usually support Idaho fescue, and have higher potential production. Loamy inclusions support big sagebrush communities. Water flow or accumulation areas typically have Sandberg bluegrass and oatgrass if too dry to support dependent riparian species.

The 2004 data indicate none to a slight departure as a whole for site stability and watershed function-related Indicators within these paddocks (Table 2). All assessments are 2004 data unless noted as 2012. Most Rangeland Health Evaluations (RHE) completed on structural benches (associated with Claypan ecological sites) show little departure from reference condition. Rangeland Health Evaluations completed on areas with deeper soils (Loamy ecological sites) and with silty surface texture (13S02W27) exhibited slightly more departure. Some RHE areas (13S02W30, 13S02W16) were close to reference condition.

Table 2. Summary of upland data¹ collected in Paddocks 4A1-4A6, JB&S Use Area, Big Springs Allotment, 2004-2012.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Loamy 11-13	13S02W21	S-M	Moderate active pedestalling, water flow patterns noted.
Loamy 11-13	13S02W30	S-M	Bare ground higher than expected, hoof shearing on grass pedestals.
Shallow Claypan 11-13	13S02W08	N-S	Large perennial grasses and stones stabilize these soils.
Shallow Claypan 11-13	13S02W16	N-S	Soil surface is armored with rock and adequate vegetation cover.
Shallow Claypan 11-13	13S02W02	S-M	Flow paths and pedestals reduce soil surface resistance to erosion.
Shallow Claypan 11-13	13S02W11	N-S (2004)	Slight active pedestalling, surface stones protect soil surface.
		N-S (2012)	Pedestals common but not active.
Shallow Claypan 11-13	13S02W15	N-S	Abundant pedestals with frequent root exposure. Rock armoring is present on soil surface.
Shallow Claypan 11-13	13S02W22	N-S	Soils are stabilized by gravel and stones.
Shallow Claypan 12-16	13S02W27	S-M	Active erosion from flow patterns, physical crust, pedestalling of grasses
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.			

A concave intermound Claypan stand was reevaluated in 2012 and found to be in reference condition. Biomass of bluebunch wheatgrass was much higher in 2012 after several normal or wet years than in 2004, after several successive dry years. Little evidence of the mortality on bunchgrasses that was commonly found in 2004 was observed in 2012. The A paddocks are grazed during April or May, with June or July use in some years, depending upon the availability of water. Grazing occurs in some paddocks during the critical growth period for perennial grasses each year. However, the holistic management reduces or prevents grazing during the same period in successive years, provides for more consistent regrowth after use, and prevents repetitive grazing during the critical growth period.

The dominant indicators of **soil erosion** processes were flow patterns and pedestalled plants (Indicators 2 & 3). Both indicators show that soil loss and degradation has occurred between shrubs. Shearing and other forms of mechanical damage to the soil can lead to surface sealing and compaction when they occur on wet clayey soils. These indicators showed slight to moderate departure from reference condition, and erosional processes were mostly historic in nature.

However, indicators 2 or 3 were given a moderate departure rating at some Claypan RHEs in 2004, primarily based upon Sandberg bluegrass rather than the decreaser grasses that were also present in shrub interspaces. At RHE areas 13S02W27 and 13S02W02 erosion from flow paths was minor. In addition, slight active pedestalling was observed at 13S02W15, 13S02W11, and at the Loamy RHE, 13S02W21. A strong upward trend in basal cover of increaser grasses, primarily Sandberg bluegrass, was noted between 2004 and 2012 at evaluation area 13S02W02, which was also monitored for trend. Rangeland Health Evaluations are a one-point-in-time judgment, which influences some indicators at the time of evaluation more than others.

The amount of bare ground showed at most slight to moderate departure from reference condition on all RHEs in 2004. Most Claypan stands had sufficient stone or gravel cover and adequate amounts of litter to provide surface protection. Step-point basal cover at the reevaluation area revealed no bare ground and 4% live vegetation in 2012. Bunchgrasses are typically the largest basal cover component of live vegetation in monitored stands. When not covered by gravel or stones (56%), biological soil crusts in the form of cyanobacteria occupied most remaining soil surface (32%).

Soil factors affecting **hydrologic function** are adequate if there is good soil structure and organic matter levels in the surface horizons, and desirable shrub, forb, and bunchgrass species occupy the surface; particularly where decreaser bunchgrass species are common in interspatial areas. Soil factors affecting hydrologic function at most RHEs are adequate.

Some evaluation areas showed slightly more departure from reference conditions, with a lower than expected component of interspatial bunchgrasses and a minor transition from decreaser toward increaser species dominance. Standing biomass of bunchgrasses was much higher at the time of the 2012 reevaluation than in 2004, and the bluebunch wheatgrass component was more evident on portions of the evaluation area that it dominated. The 2004 worksheets noted bunchgrass mortality where present but did not recognize that production and litter biomass were below normal.

Rangeland Trend

Frequency and basal cover data were collected at two long-term trend sites (13S02W02 and 13S02W16) between 1983 and 2012, both located in low sagebrush communities. However, one is located on a stony/gravelly concave intermound (13S02W02) and one is located on a convex intermound (13S02W16). A Rangeland Health Evaluation was co-located with NPFT site 13S02W02.

Data for trend site 13S2W02 indicated a generally **static** trend in persistent and non-persistent litter, basal cover of decreaser grasses and of biological soil crusts (Figure 3). Bare ground was greater in 2000 than in other years during 1983 and 2012, and increaser grass and live vegetation basal cover increased,

particularly after 2004. While vegetative cover also shows some fluctuation among readings at trend studies, a significant change in vegetative cover or biological soil crust (cryptogams) has longer lasting effects on site protection than short-term fluctuations in the amount of litter or bare ground. This site is predominantly increaser grasses with high gravel surface cover, shallower soils, and lower potential for change; and receives more livestock use than 13S02W16. A static trend in desirable components is acceptable in stands that have reached their potential composition and cover, although temporal variability may still occur.

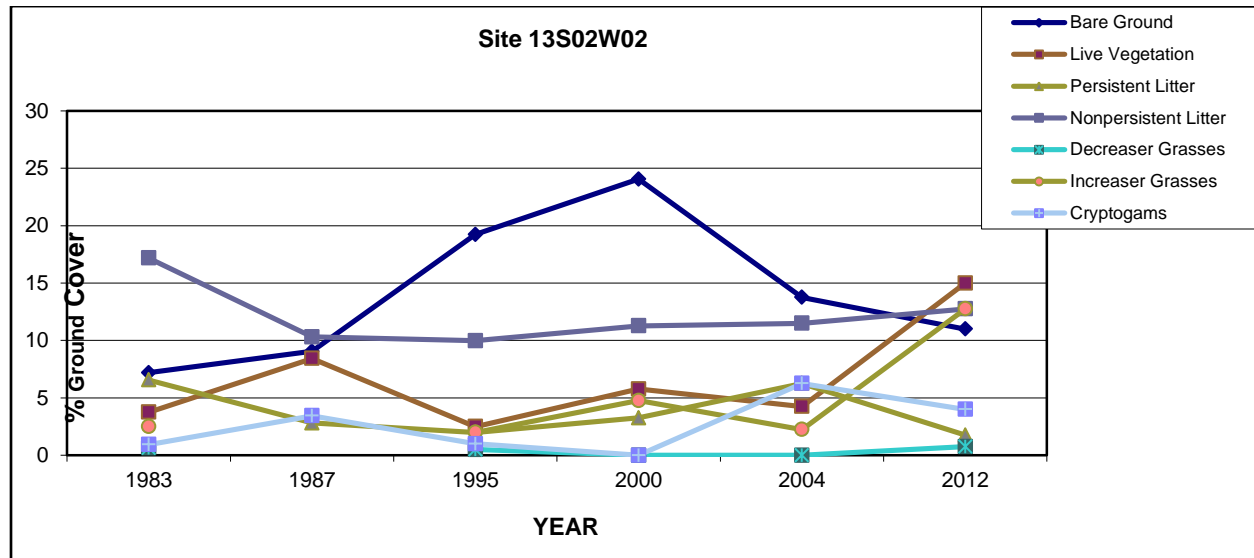


Figure 3. Basal Cover, Nested Plot Frequency Transects–JB&S Paddock 4A5, NPFT site 13S02W02

The trend data indicated a fluctuating, but generally **static**, trend in bare ground, live vegetation basal cover, and persistent litter at 13S02W16. Live vegetation reached its highest values in 1987 and 2012 after periods of above-normal crop year precipitation (Figure 4). Basal cover of increaser grasses was static between 1983 and 2012, but decreaser grass and biological soil crust basal cover increased after 2004. Non-persistent litter cover declined sharply in 1987 but recovered and reached its original level in 2012. This site has slightly deeper soils, less surface gravel, higher increaser and decreaser grass basal cover, and more potential for change than 13S02W02.

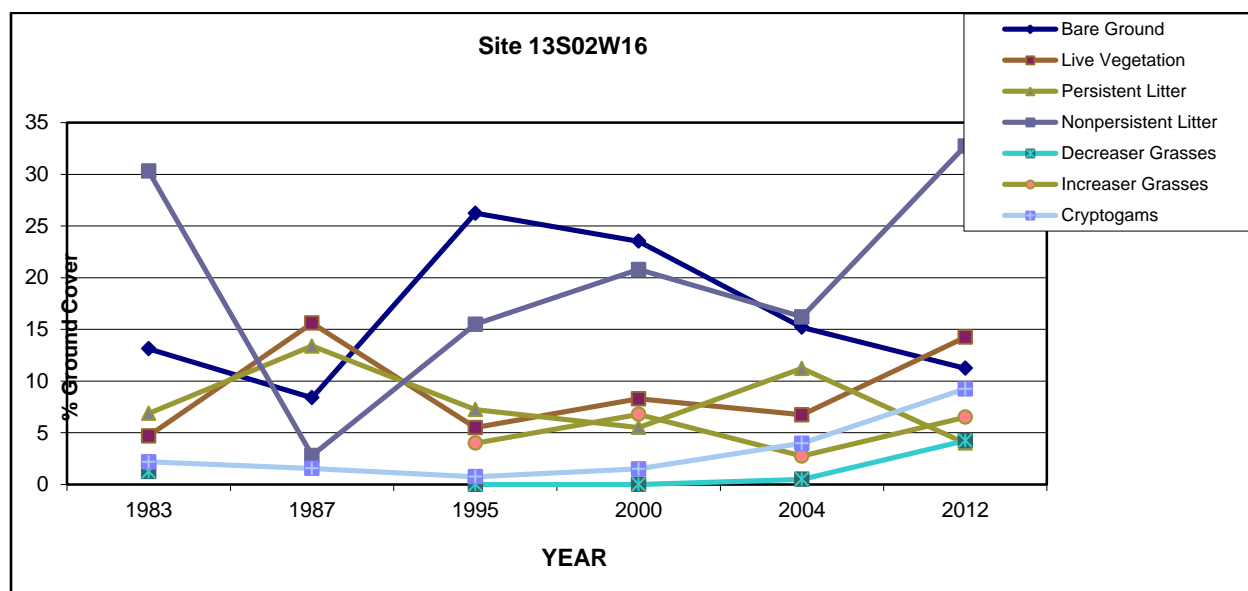


Figure 4. Basal Cover, Nested Plot Frequency Transects–JB&S Paddock 4A4, NPFT site 13S02W16

In addition, a photo plot/view photo site was monitored for visual evidence of changes in cover and species composition (photo site 13S02W13B) and is located on a low mound within stony intermound areas. Associated BLM trend photos presented in the 2011 Assessment also reflected plant dieback, reduced production, or declining non-persistent litter cover during the period of lower precipitation between 1987 and 1994 and document subsequent fluctuation in cover categories. Change between the 2005 and 2012 photos is limited to expansion of some decreaseers (Idaho fescue) in and near the plot and establishment of some small additional Sandberg bluegrass plants; and was influenced by recent relatively favorable growth years. Standing biomass was relatively high in all photos, and no bunchgrass mortality was evident. Some utilization occurred between June 4 and August 21, 2012, and removed some standing biomass.

Permittee Photo Points and Point Cover Transects

While no BLM trend or photo sites were located on Loamy inclusions; the permittee has established eight photo points and associated random point cover transects, including one on a Loamy inclusion. All are located on fine soils or at least within preferred grazing areas near water, near salting sites or along livestock trailing routes.

The JB&S trend data on 7 transects indicated a static trend in basal cover of increaser and decreaseer grasses and of live vegetation during 1993 to 1995 (Figure 5). Bare ground declined. There was an inverse relationship between bare ground and litter cover in the A paddocks. Litter cover increased sharply while bare ground declined. Nonuse in some paddocks during 1993 may have contributed to litter accumulation.

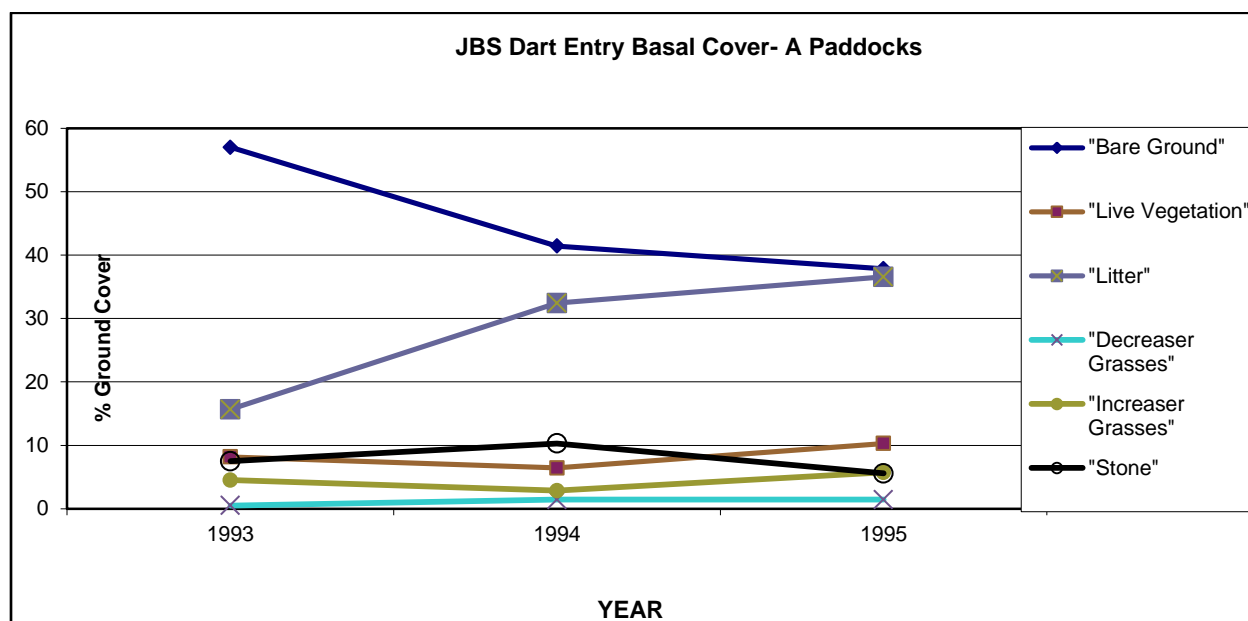


Figure 5. Basal Cover, Dart Entry Point Monitoring Data—JB&S transects DS A.1-1, A.1-2, A.2-1, A.3-1, A.4-1, A.5-1, A.6-1

Pasture 4, B Paddocks (Mid Spring Use)

Rangeland Health Evaluation

A total of 5 RHEs were completed in the B paddocks between June 8 and September 13, 2004. The B paddocks are also dominated by Claypan ecological sites, with Loamy inclusions. The 2004 data indicate slight to moderate departure as a whole for the site stability and watershed function-related Indicators within these paddocks (Table 3). Silty-soiled low mound Claypan stands showed the most departure from reference conditions for the indicators, both in drainage basin and ridgetop stands. One RHE area (12S02W33) was close to reference condition. Grazing management in the B paddocks is similar to that of the A paddocks.

Table 3. Summary of upland data¹ collected in Paddocks 4B1-4B5, JB&S Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Shallow Claypan 11-13	12S02W24	N-S	Some evidence of minor erosion from flow patterns, active pedestalling rare, slight bunchgrass mortality
Shallow Claypan 12-16	12S02W11	S-M	Some evidence of minor erosion from flow patterns, active pedestalling rare
Shallow Claypan 12-16	12S02W26A	M	Active erosion from flow patterns, active and pronounced pedestalling, hoof shearing, physical crust
Shallow Claypan 12-16	12S02W26B	S-M	Erosion along flow patterns, pedestalling common, physical crust
Shallow Claypan 12-16	12S02W33	N-S	Soils are stable with abundant rock cover.

¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.

The dominant indicators of **soil erosion** processes were again flow patterns and pedestalled plants (Indicators 2 & 3). Both indicators show that soil loss and degradation has occurred in the interspatial areas. Most indicators of soil erosion showed at most slight to moderate departure from reference condition, with erosional processes mostly historic in nature except for the two fine-soiled evaluation areas (12S02W26A and 26B). Those sites were judged to have minor active erosion in 2004, with bare and crusted areas interpreted as deposition ponding and pedestalling interpreted as evidence of slight active erosion.

The amount of bare ground was rated none to a slight departure from reference condition except on the two fine-soiled Claypan stands. The RHE completed at 12S02W26A documented more bare ground than expected in 2004, which was sometimes connected.

Soil factors affecting **hydrologic function** are adequate if there is good soil structure and organic matter levels in the surface horizons, and desirable shrub, forb, and bunchgrass species occupy the surface; particularly where decreaser bunchgrass species are common in interspatial areas.

Soil factors affecting hydrologic function at most RHE areas in these paddocks are adequate. However, the plant community component (Indicator 10) tended toward a moderate departure from reference conditions at RHE 12S02W26A; with fewer than expected interspatial bunchgrasses and a minor to adverse transition from decreaser toward increaser species dominance. The 2004 worksheets noted bunchgrass mortality, particularly on the fine-soiled low mound sites, but did not recognize that production and litter biomass were below normal even on less productive sites with no observable recent grazing or shift in functional groups.

Rangeland Trend

Permittee Photo Points and Point Cover Transects

There are no BLM long-term rangeland trend sites located in these paddocks, but the permittee has established six photo points and associated random point cover transects. All are located on fine soils or at least within preferred grazing areas, including one on a Loamy inclusion. The study on the Loamy inclusion (DS B.1-1) was revisited in July 2008. Replacement of bare ground by perennial grasses was continuing, all were vigorous, and none showed pedestalling. Time constraints did not allow exact relocation of others. The approximate locations of two other Claypan studies were visited on the same day (DS B.4-1 & DS B.4-2), with similar results.

The JB&S trend data on 6 transects indicated a static trend in basal cover of increaser and decreaser grasses and of live vegetation during 1993 to 1995 (Figure 6). Bare ground was static, but there was an inverse relationship between bare ground and litter cover in the B paddocks. Litter cover increased sharply. Variations in stocking rate may have contributed to litter accumulation during 1993 to 1995.

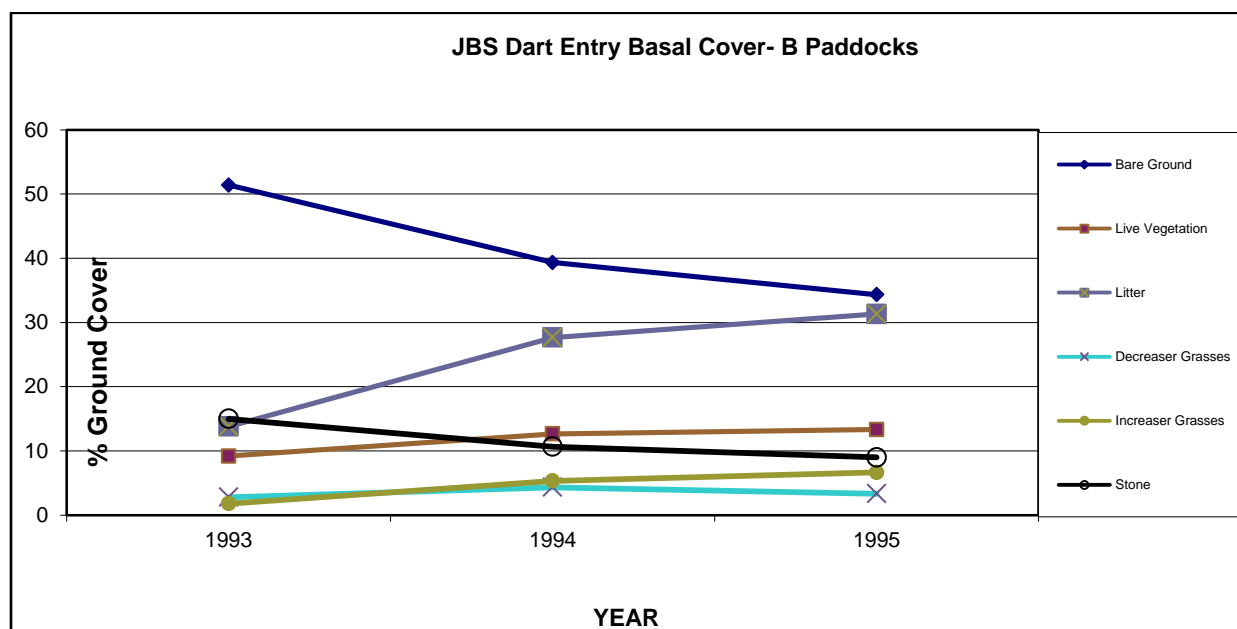


Figure 6. Basal Cover, Dart Entry Point–JB&S transects DS B.1-1, B.2-1, B.3-1, B.4-1, B.4-2, B.5-1

Pasture 4, C Paddocks (Late Spring Use)

Rangeland Health Evaluation

A total of seven RHEs were completed in the C paddocks between June 8 and September 13, 2004. The C paddocks are dominated by Stony Clayey and Clayey ecological sites which differ primarily in the amount of rock contained in soil horizons and show associated differences in production. Many of the Stony Clayey stands have stony to extremely stony surfaces which aid in protecting them from disturbance. Churning Clay ecological sites typically occur in association with Clayey sites as inclusions in basin bottoms and along drainages where water accumulates in spring. They are particularly subject to frost heaving and cracking. Loamy inclusions which support big sagebrush communities are scattered throughout, most typically on tableland escarpments.

The 2004 data indicate slight to moderate departure as a whole for the site stability and watershed function-related Indicators within these paddocks (Table 4). The Stony Clayey RHEs on Big Springs Butte showed little departure from reference condition, as did the Loamy stand in D Bar Basin. The Clayey stands in D Bar Basin, the basin containing School Section Reservoir, and on inclusions on Big Springs Butte showed slight to moderate departure from reference. The Churning Clay RHE, where utilization is typically greater, exhibited more departure from reference condition than other evaluation areas. Clayey stands 11S02W25, 11S1W26 and 11S1W34A and Stony Clayey stand 11S1W22 were still close to reference condition. The C paddocks are usually grazed during June and into early July but are grazed in April or May in some years. Only 3 springs provide reliable water in summer and fall months, and the few reservoirs and natural potholes along drainages dry up early.

Table 4. Summary of upland data ¹ collected in Paddocks 4C1-4C4, JB&S Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Churning Clay 12-16	12S02W02	S-M	Active pedestalling and shearing of mounded grasses, bare ground patches moderate in size and frequently connected.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Clayey 12-15	11S01W34A	S-M	Pedestals, increased bare ground and surface sealing but does not appear to be historic and not active.
Clayey 12-15	11S02W26	S-M	Some loss of stability in shrub interspaces, pedestalling mostly historic.
Clayey 12-15	11S02W25	S-M to N-S	Pedestalling, shearing and cut areas mostly historic
Stony Clayey 12-16	11S02W24	N-S	Slightly more bare ground than expected, overall stable soils.
Stony Clayey 12-16	11S02W22	N-S	Rock armored, little bare ground
Loamy 13-16	11S01W34B	N-S	Bare ground more than expected but patches are small and rarely connected.
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.			

The dominant indicators of **soil erosion** processes were flow patterns and pedestalled plants (Indicators 2 & 3). If present, these indicators show that soil loss and degradation has occurred in the interspatial areas, but are mostly historic processes within the C paddocks. Even on the Churning Clay stand, active pedestalling was rare. Most indicators of soil erosion showed at most slight to moderate departure from reference condition.

The amount of bare ground was rated at most slight to moderate departure from reference condition, with adequate amounts of litter to provide surface protection. However, bare areas were of moderate size and sporadically connected in the Churning Clay stand.

Soil factors affecting **hydrologic function** are adequate if there is good soil structure and organic matter levels in surface horizons, and desirable shrub, forb, and bunchgrass species occupy the surface, particularly where decreaser bunchgrass species are common in interspatial areas. Soil factors affecting hydrologic function at most RHE areas in the C paddocks are adequate. Localized areas showed more departure, with fewer than expected interspatial bunchgrasses and a minor transition from decreaser toward increaser species dominance. The 2004 worksheets noted bunchgrass mortality on most evaluation areas based primarily upon Sandberg bluegrass pedestalling, but did not recognize that production and litter biomass were below normal.

Frequency and basal cover data were collected at two long-term trend sites between 1983 and 2012. Both are located in very stony areas, increaser grasses predominate at both and neither is co-located with evaluation areas. Study 11S02W25 represents Shallow Claypan 12-16 ecological sites while 11S02W15 represents Stony Clayey 12-15 ecological sites, with Shallow Claypan sites less typical of these paddocks. Although basal cover of increaser grasses is higher at 11S02W15 it appears to have less potential for change than 11S02W25 because of the very high stone cover. Study sites with more bare ground, i.e., with less permanent cover provided by other categories, are more likely to show a statistical relationship with non-persistent litter cover.

Rangeland Trend

Trend data for 11S02W15 indicated a generally **static** trend in persistent litter, basal cover of decreaser grasses, and biological soil crusts (Figure 7). Bare ground continued a slow decline. Live vegetation and increaser grass basal cover showed some fluctuation and generally static trends, but were both higher in 2012 than in any previous year and may reflect favorable growth conditions in recent years. Decreaser grass basal cover was very low and probably at potential on the sampled area. As in other monitored stands, bunchgrasses are typically the largest basal cover component of live vegetation cover.

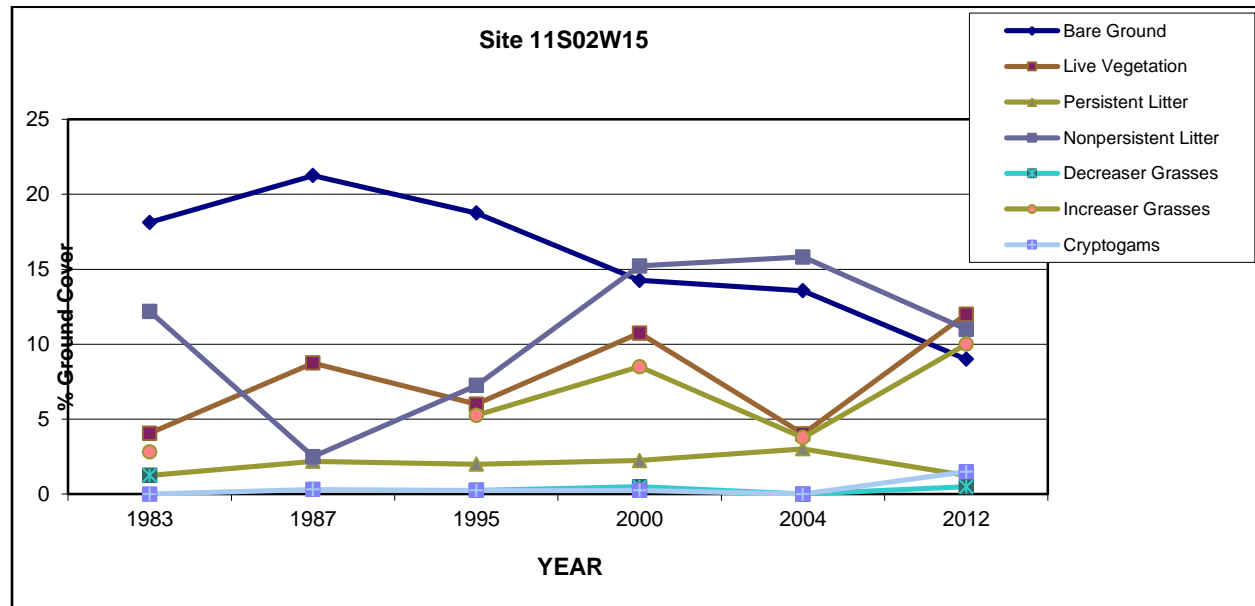


Figure 7. Basal Cover, Nested Plot Frequency Transects–JB&S Paddock 4C4, NPFT site 11S02W15

There was no inverse relationship between bare ground and non-persistent litter cover during 1983 to 2012 at either study site. Non-persistent litter cover declined sharply but recovered to its original level at both trend sites.

Trend data indicated a generally **static** trend in bare ground and basal cover of decreaser grasses at 11S02W25 between 1983 and 2012 (Figure 8). Persistent litter fluctuated slightly but was generally static. Bare ground was low at this trend site, reflecting inherently high levels of gravel and rock cover. Biological soil crust cover increased. Increaser grass basal cover increased, particularly after 2004, and was reflected in greater live vegetation cover in 2012. Although increaser grasses predominate, basal cover of both increaser and decreaser grasses is relatively low.

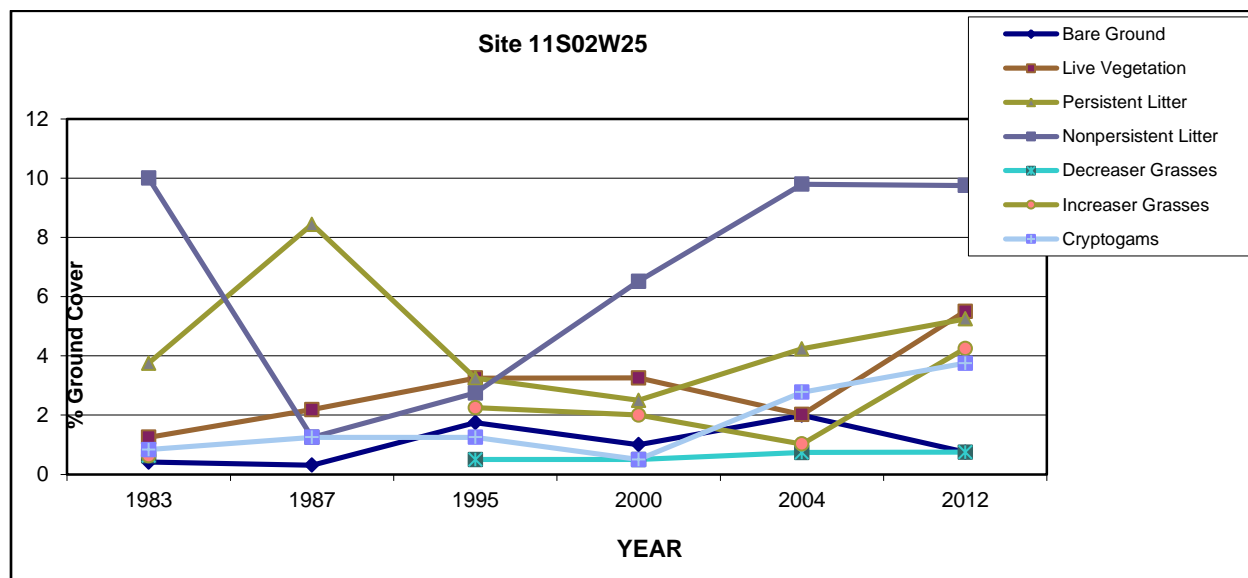


Figure 8. Basal Cover, Nested Plot Frequency Transects–JB&S Paddock 4C4, NPFT site 11S02W25

Permittee Photo Points and Point Cover Transects

While no BLM trend or photo sites were located in basin bottoms or Loamy inclusions; the permittee has established five photo points and associated random point cover transects in these paddocks. Four are located on fine soils (Clayey sites) within preferred grazing areas. The approximate location of the study located ¼ mile from School Section Reservoir (DS C.4-1) was revisited in July 2008. Replacement of bare ground by perennial grasses was continuing, all were vigorous, and bare areas were smaller and less continuous than in 1993. Idaho fescue was still somewhat shrubbed up in the general area but was localized and not typical of Clayey stands even in this drainage basin. Pedestals were shorter and less abundant than on two of the 2004 evaluation areas.

The JB&S trend data on 5 transects indicated a static trend in basal cover of increaser and decreaser grasses and of live vegetation during 1993 to 1995 (Figure 9). Bare ground was static, but there was an inverse relationship between bare ground and litter cover in the C paddocks. Variations in stocking rate may have contributed to litter accumulation. Although detailed actual use information is not available prior to 1993, stocking rates for paddocks 4C2, 4C3, and 4C4 were lighter than the previous average for the JB&S Use Area; or at the very least, the duration of grazing in preferred areas was shorter.

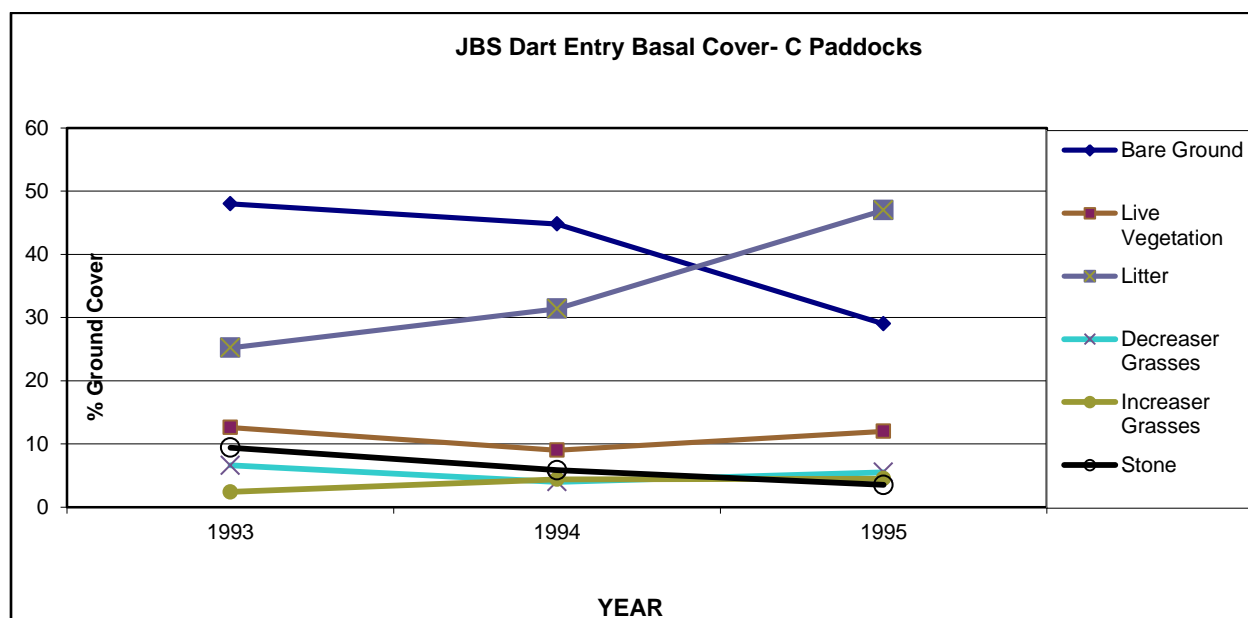


Figure 9. Basal Cover, Dart Entry Point Monitoring Data—JB&S transects DS C.1-1, C.2-1, C.3-1, C.4-1, C.4-2

Pasture 4, D and F Paddocks, Wagon Box Basin (Early Summer Use)

Rangeland Health

A total of 10 RHEs were completed in the D paddocks, 3 RHEs in Wagon Box Basin (Pasture 4D3) and none in paddock 4F1 between June 8 and September 13, 2004. Wagon Box Basin is separated from other paddocks by natural barriers and gap fencing. The D and F paddocks are dominated by the Stony Clayey and Clayey ecological sites; while Wagon Box Basin (Pasture 4D3) is dominated by Shallow Claypan ecological sites. Churning Clay and associated Clayey ecological sites are more widespread in the D and F paddocks than in the C paddocks.

As in the A and B paddocks, some Claypan stands have lower production potential (concave intermound) and species typical of shallower and drier sites are more prominent (Sandberg bluegrass, Thurber needlegrass). Convex intermound Claypan stands have slightly deeper soils and support the dominant species from the site guides. While less prominent, low mound Claypan soils are deeper still, usually support Idaho fescue, and have higher potential production. Loamy inclusions supporting big sagebrush communities are most prominent in Wagon Box Basin, but none were sampled due to their limited area.

The D and F paddocks and Wagon Box Basin are usually grazed during the latter part of June and later. They have more reliable water sources that permit grazing in August, September, and October (2011 Assessment, page 187). Grazing usually occurs during the latter part or after the critical growth period for perennial grasses each year.

The 2004 data indicated that the Wagon Box Basin Pasture (4D3) showed the most departure for the site stability and watershed function-related Indicators within this portion of the JBS Use Area (Table 5). Two of three stands sampled in 2004 showed slight to moderate departure from reference condition overall. The third evaluation area (10S02W28A) was close to reference condition.

A convex intermound Claypan stand (10S2W28A) was reevaluated in 2012 within Pasture 4D3, with little departure from reference condition for the watershed attributes. Of the three stands examined in 2004, this one had the highest composition of Idaho fescue, the dominant decreaser species; and also had the least area of concave intermound soil where Sandberg bluegrass is the dominant species. Biomass of

Idaho fescue and other species appeared similar to 2004, but was cured and had received some utilization when visited in August, 2012. Some crown mortality on the larger Idaho fescue plants was observed in both years. However, grazing typically occurs during dry soil conditions that are not conducive to mechanical damage by livestock.

The remaining D and F paddocks showed none to a slight departure as a whole. In those paddocks, Churning Clay RHEs in basin bottoms exhibited slightly more departure than surrounding tables and benches while other stands evaluated in 2004 showed little departure from reference condition. An additional stand is reclassified to a different ecological site from that presented in the 2011 Assessment because the soil and vegetation components did not conform to the original Ecological Site Description. Several RHE areas (10S02W11, 10S01W21, 11S01W09 and 11S02W03) were close to reference condition.

A Stony Clayey ecological site (11S01W09) was reevaluated in 2012, and showed little departure from reference condition. Biomass, particularly of perennial grasses, was much higher in 2012 after several normal or wet years than in 2004 after several successive dry years, with only slight mortality on bunchgrasses. None of the evaluation areas in the D and F paddocks had recognized that annual production was below 80% of normal in 2004.

Table 5. Summary of upland data¹ collected in Paddocks 4D1-4D2, 4D4-4D5, and 4F1 and in Wagon Box Basin (Pasture 4D3), JB&S Use Area, Big Springs Allotment, 2004-2012.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Churning Clay 12-16	10S02W11	N-S	More bare ground in interspaces than expected.
Churning Clay 12-16	10S02W15	S-M	Flow patterns more distinct than expected. Shearing on mounds has created large pedestals. Historic and current.
Churning Clay 12-16	10S02W24	S-M to N-S	Bare ground in shrub interspaces higher than expected. Not enough rock cover to compensate for reduced vegetation.
Churning Clay 12-16	10S02W13	N-S	Abundant vegetation cover and stones stabilize this site.
Clayey 12-15	11S02W03	S-M to N-S	Some evidence of erosion and deposition along flow paths. Pedestals are mostly historic and associated with water flow.
Clayey 12-15	10S01W30	N-S	Some soil loss has occurred in past but generally soil is stabilized by stones and vegetation.
Stony Clayey 12-16	10S01W21	N-S	Rock armored and stable.
Stony Clayey 12-16	11S01W14	S-M to N-S	Historic soil degradation and pedestalling.
Stony Clayey 12-16	11S02W10	N-S	Very armored by stones and gravel with adequate vegetation cover.

Ecological Site	Location	RHE Condition ¹ Watershed	RHE Comments
Stony Clayey 12-16	11S01W09	N-S (2004)	Extremely stable soils from adequate vegetation and rock cover.
		N-S (2014)	Pedestalling on scattered grasses where water flows between rocks.
Shallow Claypan 12-16	10S02W28A	N-S (2004)	Soils are stabilized by vegetation and abundant rock cover.
		N-S (2012)	Overall stable soils but grasses consistently pedestalled, mostly historic.
Shallow Claypan 12-16	10S02W28B	S-M	Pedestalling common on grasses in flow paths. Flow patterns are generally short and stable with occasional long and connected paths.
Shallow Claypan 12-16	10S02W34B	S-M	Pedestals common in flow paths with exposed roots. Flow patterns are distinct with cut areas common.
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.			

The dominant indicators of **soil erosion** processes were again flow patterns and pedestalled plants, both showing that soil loss and degradation has occurred in shrub interspaces. These indicators and others showed at most slight to moderate departure from reference condition, with erosional processes mostly historic in the remaining D and F paddocks. As in other areas, pedestals on bunchgrasses and crusted silty bare areas were interpreted as evidence of surface erosion in 2004, although seasonal ponding and frost heaving were also acknowledged as part of the site potential for Clayey and Churning Clay stands.

In Wagon Box Basin, erosional processes were still slightly active. Particularly, Indicators 2 or 3 received a moderate departure rating on two of three Claypan RHEs (10S02W28B, 10S02W34B) in Wagon Box Basin Pasture in 2004. The crusted bare ground in Claypan stands was also interpreted as deposition from active sheet erosion rather than part of the site potential as on Claypan stand 10S2W34B, and was assumed to be hidden by surface gravel on Claypan stand 10S2W28B so that part of the erosion and redeposition process was not evident there.

Step-point basal cover at the 2012 reevaluation area (10S2W28A) showed no bare ground, 28% live vegetation, and 34% biotic crust cover. Although species making up live vegetation cover were not differentiated, bunchgrasses are typically the largest basal cover component of live vegetation in monitored stands. Trend in basal cover appears static for bunchgrasses and live vegetation at 10S02W34B, a nearby convex intermound stand through 2012, but trend photos suggest that long-term trend in the decreaser grasses is upward.

Soil factors affecting **hydrologic function** are adequate if there is good soil structure, organic matter levels in soil surface horizons, and desirable shrub, forb, and bunchgrass species occupy the surface; particularly where decreaser bunchgrass species are common in shrub interspaces. Soil factors affecting hydrologic function at Clayey and Churning Clay RHEs are adequate. Stony Clayey RHEs have a higher percent of stone cover and are closest to reference conditions; although physical soil crusts in small interspatial areas were present at 11S01W14. All of the Churning Clay evaluation areas had bluegrass

(the decreaser species) composition within the range of reference condition, including the reclassified stand, although one had more annual forbs than expected in plant interspaces.

The Wagon Box Basin pasture showed a minor transition from decreaser toward increaser species dominance. Pedestalling and crown mortality on bunchgrasses in 2004 were assumed to reflect exposure of roots by surface erosion. The 2012 reevaluation area showed more shrubs than expected, but the slight compositional shift was not detrimental to hydrologic function.

Rangeland Trend

Frequency and basal cover data were collected at three long-term trend sites (10S01W21, 10S02W14, and 11S02W10) between 1983 and 2004 within the D paddocks. Two (10S1W21 and 11S02W10) are located on very stony areas, while 10S02W14 is located in a fine-soiled bottom/drainage, where ponding and flow of water occur seasonally, and high disturbance has occurred in the past. An RHE is co-located with 10S01W21.

Trend data for 10S1W21 indicated a generally **static** trend in non-persistent litter and in basal cover of decreaser grasses, while increaser grass basal cover increased between 1983 and 2012 (Figure 10). Live vegetation basal cover fluctuated but was generally static after 1987. As on other study sites, perennial grasses are the largest component of live vegetation basal cover. Lower values for 1995 may reflect plant dieback and expansion after the period of lower precipitation between 1987 and 1994. Bare ground cover showed some fluctuation; but declined overall between 1983 and 2012. There was no statistical relationship between bare ground and non-persistent litter cover. Biological soil crusts were not recorded at any sampling before 2012. The cryptogams recorded in 2012 may be primarily cyanobacteria on fine soils between the high rock and gravel cover.

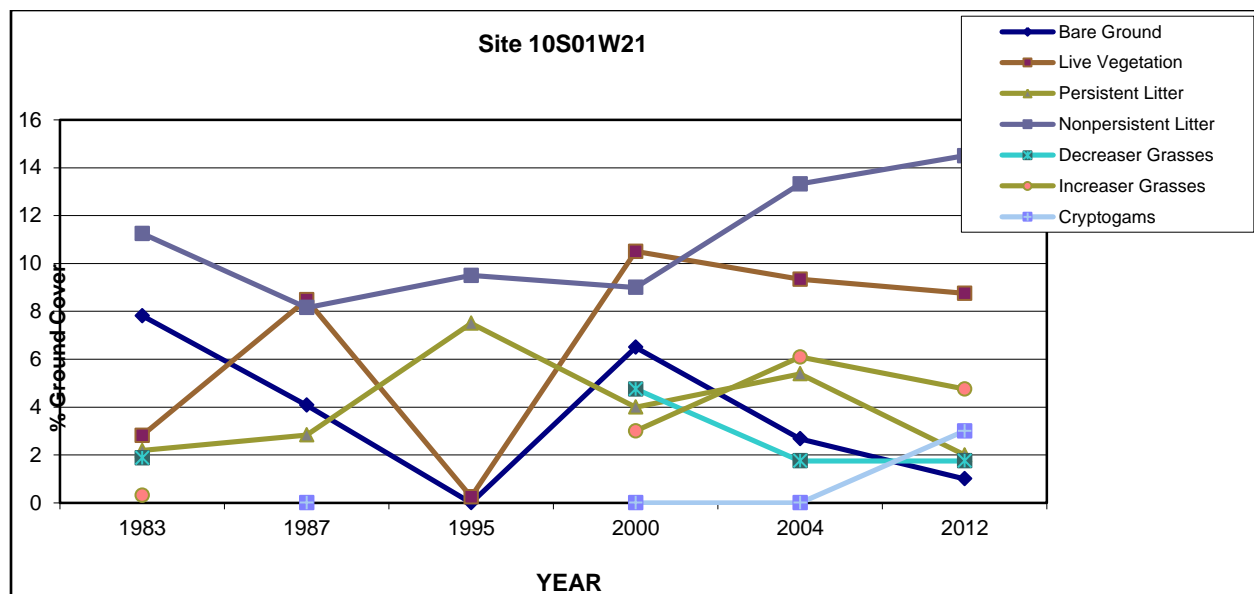


Figure 10. Basal Cover, Nested Plot Frequency Transects–JB&S Paddock 4D4 (Black) NPFT site 10S01W21

Trend data for 11S02W10 indicated generally **static** trends in persistent litter, biological soil crust, and in basal cover of decreaser and increaser grasses between 1983 and 2012 (Figure 11). Increaser grasses predominate, and decreaser grass cover is consistently very low. Live vegetation basal cover has shown substantial fluctuation, with marked declines during successive dry periods from 1987 through 1994 and from 1999 through 2004, reaching its highest value ever in 2012 after a period of normal to above-normal crop-year precipitation. Increaser grasses have been the largest single component of live vegetation basal cover over the past 30 years.

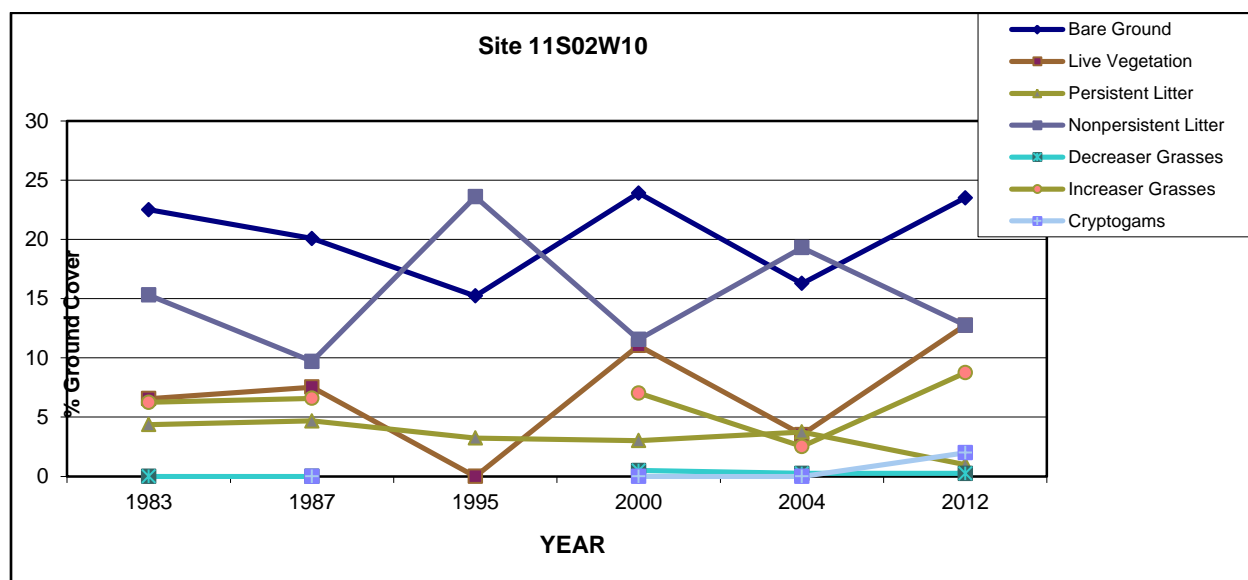


Figure 11. Basal Cover, Nested Plot Frequency Transects–JB&S Paddock 4D2, NPFT site 11S02W10

There was also an inverse relationship between bare ground and non-persistent litter cover at 11S2W10. However, that site, which is also located in a drainage, has a high cover of stones and gravel, and there was not an obvious relationship among bare ground, non-persistent litter cover, and growth year precipitation. While vegetative cover also shows some fluctuation among readings at trend studies, a significant change in vegetative cover or biocrust has longer lasting effects on site protection than short-term fluctuations in the amount of litter or bare ground.

Trend data for 10S2W14 indicated generally **static** trends in persistent litter, biological soil crust, and in basal cover of live vegetation, decrease and increaser grasses between 1983 and 2009 (Figure 12). Increaser grasses predominate, while decrease grass cover has been almost nonexistent during the entire 30-year period of monitoring. A static trend in desirable cover components is acceptable in stands that have reached their potential composition and cover, although temporal variability may still occur.

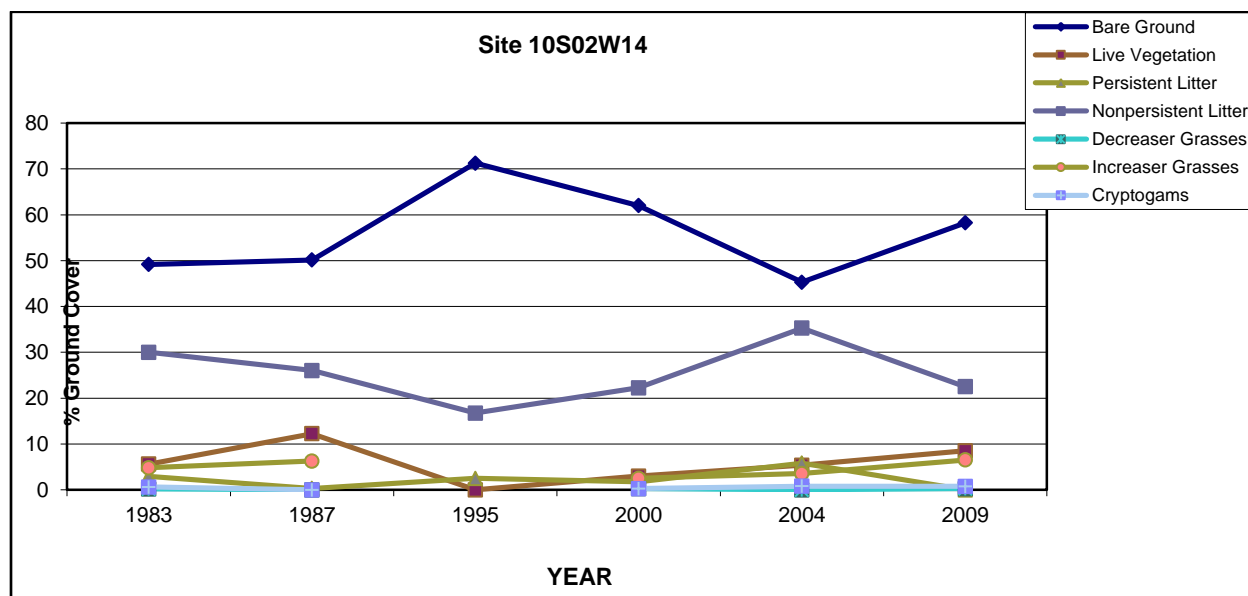


Figure 12. Basal Cover, Nested Plot Frequency Transects–JB&S Paddock 4D5, NPFT site 10S02W14

Bare ground cover increased sharply between 1987 and 1995; and live vegetation basal cover declined. Lower values for live vegetation cover in 1995 may reflect plant dieback during the period of below-normal crop year precipitation between 1987 and 1994. There was also a more consistent inverse relationship between bare ground and non-persistent litter cover at 10S2W14, which has very little rock or gravel cover, during 1983 to 2009. Non-persistent litter cover declined between 1983 and 1995, but recovered to its original level in 2004. Climatic conditions were adverse for litter accumulation during the decline, although livestock consumption possibly contributed. As is typical in Clayey stands, the soil surface is silt loam, which forms physical crusts as it wets and dries.

Another long-term trend site is located in Wagon Box Basin (Pasture 4D3, 10S02W34B), also co-located with an RHE and with permittee photo point DS D.3-1. It has substantial rock and gravel cover, with bare ground located primarily between stones.

Trend data for 10S2W34B indicated a generally **static** trend in persistent litter, biological soil crusts and basal cover of decreaser and increaser grasses between 1983 and 2012 (Figure 13). Live vegetation basal cover fluctuated but was generally static. Lower live vegetation cover values for 1995 and higher values for 2000 may reflect perennial grass dieback during the period of lower precipitation between 1987 and 1994 and subsequent expansion during the period of higher precipitation between 1995 and 1998.

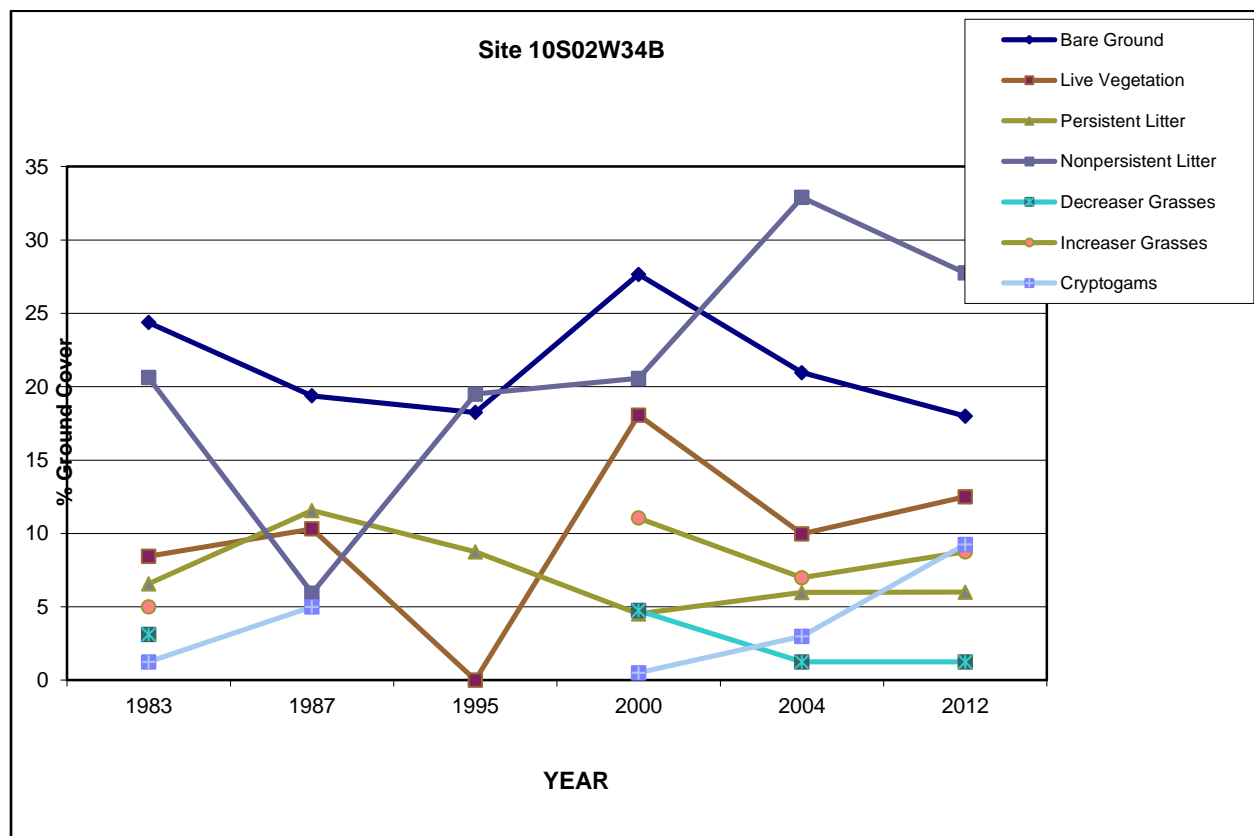


Figure 13. Basal Cover, Nested Plot Frequency Transects– JB&S Pasture 4D3 (WBB), NPFT site 10S02W34B

Overall, bare ground was static between 1983 and 2004. There was no statistical relationship between bare ground and non-persistent litter cover. The relatively high cover of rock and gravel on site reduced the influence of litter accumulation on bare ground cover measurements; however, non-persistent litter cover was higher in 2004 and 2012 than in any previous years. Although the greenness of the grass leaves and lack of cured material in photos accompanying the RHEs could suggest that utilization was heavy in 2003, with little regrowth, non-persistent litter has continued to accumulate after 1987 at this

long-term study. Many other seldom-grazed stands throughout the three use areas showed a similar greenness in the early summer of 2004, which may also reflect low production and lack of biomass accumulation in previous dry years. Trend photos suggest that trend in decreaser grasses is upward through 2012 at 10S02W34B.

BLM established 4 photo plots earlier to monitor use on fine soils within the Asa Black cattle allotment, which included Wagon Box Basin and essentially the same paddocks. These included a Clayey, two Churning Clay and a Loamy inclusion within predominantly stony areas. Two were monitored between 1976 and 2012 and two from 1976 through 1981. BLM attempted to relocate and rephotograph all of them in 2012, and was successful in locating the Clayey study in Wagon Box Basin (10S02W34A). Photos indicated trend based upon plant cover, composition of decreaser grasses, and amount of bare ground was strongly upward since 1976.

One of the Churning Clay studies was revisited in June 2012 (10S02W10). While the plot stakes were not found, the 2012 view photos show the site with a greater Idaho fescue component, a lower forb component, and less bare ground than in June 1976.

The other Churning Clay study was revisited in June 2012 (10S02W25). It is an intergrade with Stony Clayey stands. The 2012 photos show little change in the site since 1981, which is probably at its potential.

Permittee Photo Points and Point Cover Transects

The permittee established nine additional photo points and associated random point cover transects on fine soils or at least within preferred grazing areas. Two are located on loamy inclusions that support big sagebrush communities, six are on Clayey basin bottoms, and one is on a low sagebrush community in Wagon Box Basin. The JB&S trend data on 9 transects indicated a static trend in basal cover of increaser and decreaser grasses and of live vegetation during 1993 and 1994 (Figure 14). Bare ground was static, but there was also an inverse relationship between bare ground and litter cover. Litter cover was greater in 1994 than in 1993. Variations in stocking rate may have contributed to litter accumulation. Although detailed actual use information is not available prior to 1993, stocking rates for this portion of the JB&S Use Area were lighter than the previous average; or at the very least, the duration of grazing in preferred areas was shorter.

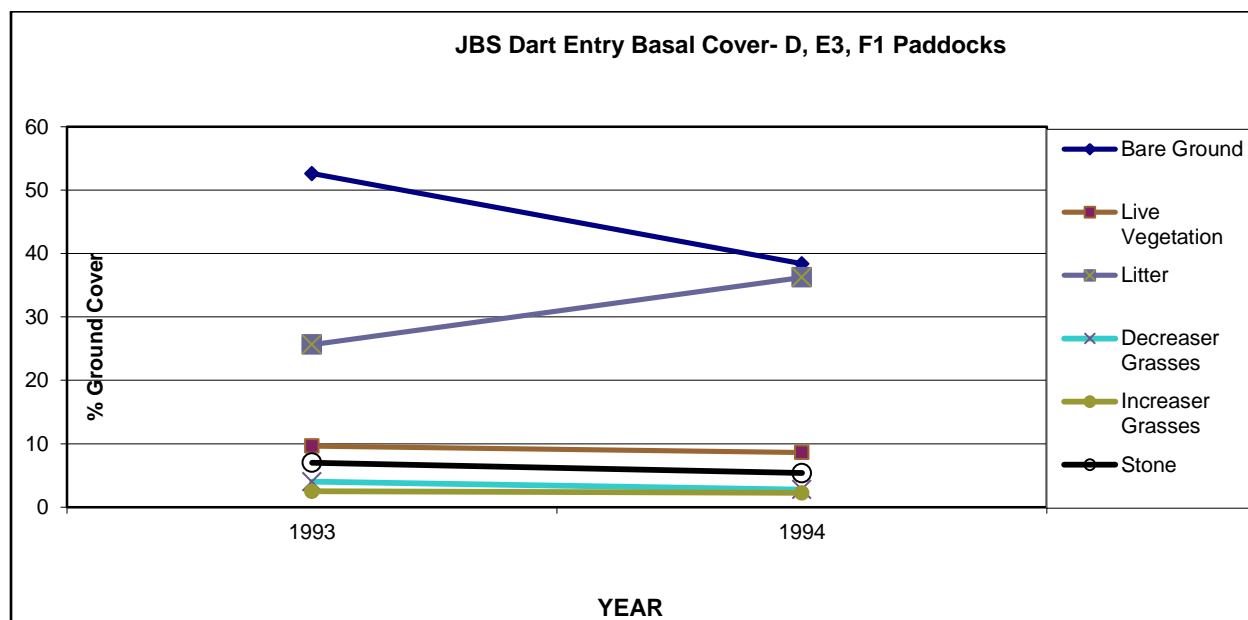


Figure 14. Basal Cover, Dart Entry Point Monitoring Data–JB&S transects DS D.1-1, D.1-2, D.2-1, D.3-1, D.4-1, D.4-2, D.5-1, CC F.1-1

Standards 2, 3, 7 Overview of Riparian Health Evaluations, Trend and Water Quality

Use Area Summary

The summary table below displays the functioning condition of all stream segments in the Joseph Black & Sons (JB&S) use area (Table 6). The table does not differentiate between whether a stream met Standards 2 or 3. However, with the exception of Owyhee River where Standard 2 was met, but not standard 3, there were no differences in functioning condition ratings between these standards on any other individually stratified stream segment; therefore, Table 6 provides a convenient summary functioning condition ratings for both Standards 2 (riparian/wetland vegetation) and 3 (stream channel/floodplains). Components of standards 2 (e.g., vegetation that provides stream shading) and 3 (e.g., streambank stability) directly affect water quality (e.g., water temperature, sedimentation); therefore, standards 2, 3, and 7(water quality) are shown together in Table 6 below. Functioning condition ratings of individual stratified stream segments are shown in the tables, and discussed individually by groups of paddocks under the Stream Inventories/Assessments section. Water quality assessments for each stream are discussed in the Standard 7: Water Quality section.

Table 6. Combined summary of stream functioning condition ratings for Standards 2 and 3, and water quality for Standard 7 in the JB & S use area. Big Springs Allotment (2005-2012 data).

Stream Name	Flow Regime ¹	Functioning Condition Rating (miles) for Standards 2 & 3			Total	H2O Quality Standards met? (yes/no)
		PFC	FAR	NF		
Deep	P	11.6			11.6	^a _c yes
Owyhee R.	P		14.1		14.1	^a no
Camas	P/I	4.1	1.2	2.7	8.0	^d yes
Pole	P	0.5	2.3		2.8	^a no
Dickshooter	I	10.0			10.0	^d yes
Total miles		40.3	3.5	2.7	46.5	
Percentage of total		87%	7%	6%	100%	
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition) Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-15 1998). ^a IDEQ TMDL (2003) for temperature ^b BLM data. No IDEQ TMDL. Not 303(d) listed ^c Reported now as Category 2: In Full Support, (IDEQ Integrated Report 2012). ^d Reported as zero flow, (IDEQ Integrated Report 2012).						

Riparian Utilization

Only a few sites were monitored for riparian vegetation grazing utilization on streams in Pasture 4, because periodic visits revealed that four inches of stubble were present at the end of the growing season. The only quantitative data collected were from Wagon Box Basin (paddock 4D.3, Table 8). From observations made during riparian inventories, utilization of riparian vegetation was light to moderate on accessible segments of Camas and Pole creeks, with little to no use on stream segments in rugged canyons (Deep and Pole creeks, and the Owyhee River).

Table 8. Ocular estimate of median stubble height and browse utilization for streams in Wagon Box Basin (Pasture 4D3), JB&S Use Area, Big Springs Allotment, 2005.

Stream (segment)	Site	Date	Median Stubble Height (inches)	Degree of Browse Use
Camas (0.0)	10S02W28 SENE	11/4/99	8-10	
Pole (9.3) ^b	10S02W29 NWSE	10/16/01	22	Light
^a Ocular estimate (USBLM 1999).				

Standard 2: Riparian Areas and Wetlands

The locations of the stream segments are shown in Figure 15, with the labels located at the downstream end of each segment. The spring locations are shown in Figure 16.

Streams

Deep Creek and the Owyhee River flow on the west and south side of Pasture 4. Both segments of Deep Creek (11.6-miles) were in PFC. The Owyhee River (14.1 miles of stream) is Functioning at Risk with an upward trend. Dickshooter Creek was all in PFC.

Pasture 4, A Paddocks (Early – Mid Spring Use)

Deep Creek

Deep Creek segment Deep-00.0 (11.6-stream-miles) was in PFC (Table 7). The canyon of Deep Creek delineates the western boundary of the JB&S use area, and the eastern boundary of the Sierra del Rio use area. The lowermost 5-mile-long reach of Deep Creek forms the eastern boundary of the Owyhee Resource Area and western boundary of Pasture 4, paddock 4A.3. The respective boundaries are unfenced, and rely only on geologic features to restrict livestock movement.

Deep Creek flows through a canyon with shear walls and significant amounts of rock in the floodplain. With few exceptions, the stream is inaccessible to livestock. Riparian areas of Deep Creek are vegetated with vigorous plant communities dominated by willows (*Salix lutea*, *S. lasiandra*, and *S. exigua*), redstem dogwood, golden currant, and others. Although all segments of Deep Creek are in PFC, the stream has moderate levels of sediment being delivered, in part, from upstream degraded stream reaches on private lands. However, the stream is effectively transporting the sediment, with minimal negative impacts to the riparian vegetation.

Table 7. Riparian areas and riparian-wetland indicators, and functioning condition rating by stream segment, for Pasture 4, JB&S Use Area, Big Springs Allotment, 2012.

Stream segment number	Deep 0.0	Owyhee 00.0	Camas 00.0	Camas 4.1	Camas 6.1	Pole 11.9	Pole 12.7	Pole 018.5	Dickshooter 00.0
Functioning Condition	PFC	FAR	PFC	FAR	NF	PFC	FAR	FAR	PFC
Stream miles	11.6	14.1	4.1	1.2	2.7	0.5	0.9	1.4	10.0
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition) Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-15 1998).									

Owyhee River

The Owyhee River and its associated canyon form the southern boundary of paddocks 4A.1-4A.3. Livestock access to the river is restricted by rocky or sheer canyon slopes. There was little sign of livestock use of riparian areas on the river in 2004. The majority of the riparian areas along the river are in PFC. The Owyhee River typically has high, flashy flows in spring during snow-melt, which combined with the confined canyon and very high sediment loading, limits most riparian areas to plant communities dominated by early seral stage sandbar willow (*S. exigua*). Banks are stable, and willow cover appears to be increasing. Point bars are revegetating and the river channel is narrowing.

Pasture 4, B paddocks (Mid Spring Use)

Dickshooter Creek

Dickshooter Creek (10.0-stream-miles) and its associated canyon occur in paddocks 4B.5, 4B.3, and 4B.2. The stream is highly confined by a narrow, rugged canyon that prevents livestock access. Areas inside the canyon that are not naturally scoured by stream flows are vegetated with riparian plant communities dominated by willows (*S. lasiandra*) and rushes (*Scirpus microcarpus*). The stream is in PFC (Table 7). Much of the stream has intermittent stream flows, but the lower two to three miles of stream have perennial pools of surface water.

Pasture 4, C Paddocks (Late Spring Use)

No perennial stream segments occur within Pasture 4C1 or within paddocks 4C2-4C4 of the JB&S Use Area.

Pasture 4, D Paddocks (Early Summer Use)

Camas Creek

Camas Creek is a tributary to Pole Creek located in pasture 4. The lower 4.1-mile-long reach (CAMAS-00.0) of this stream is located in a rugged, rocky canyon (within paddock 4D.3) that restricts livestock use, and this segment is in PFC. Healthy riparian plant communities were dominated by willows (*S. lutea*, *S. lasiandra*, and *S. exigua*) and sedges (*Carex nebrascensis* and *Carex lanuginosa*).

The middle portion of Camas Creek (CAMAS-04.1) is located in a less confined canyon with less rock present in the floodplain (paddock 4D.2). Much of the middle portion of Camas Creek is FAR because of the presence of active headcuts (CAMAS02.9). Camas Creek in segment CAMAS-03.0 transitions from a confined canyon to a broad valley reach. Overall this FAR segment is in an upward trend with banks stabilized by late seral vegetation.

Camas Creek segment (CAMAS-06.1) in paddock 4D.4 was rated in (NF) non-functioning condition. This segment has an intermittent flow regime. Obligate wetland vegetation here is limited by the flow regime, together with heavy historic and current livestock grazing use levels, bank shearing, and actively entrenching stream channel, which has resulted in dewatering of the adjacent historic floodplain and severely reduced the area suitable for deep-rooted bank stabilizing riparian plants to survive. Large areas along streambanks in this segment are devoid of vegetation. Active bank erosion was estimated at >50%.

Pole Creek

Segments of Pole Creek adjacent to the Camas Creek confluence are located in paddock 4D.3, including a separate water gap at the west end (segment 9.3). Pole Creek segment 11.9 is located in rocky, confined canyons and receives only light grazing. The stream is well-vegetated with late-seral riparian plant communities dominated by willows (primarily *S. lasiandra*, *S. lutea*, and *S. geeyeriana*) and black cottonwood trees (*Populus trichocarpa*). These stream segments are in PFC (for Standard 2).

The upper Pole Creek segments, Pole-12.7 (4WBB) and Pole-18.5 (4F.1) are located in unconfined, low-gradient valleys with varying amounts of rock present in the floodplain. Stream flows are intermittent, but some portions of the stream retain perennial pools of surface water. Riparian plant communities are dominated by herbaceous species (primarily *J. balticus*, *C. nebrascensis*, with some areas with introduced grasses). Willows (primarily *S. lutea*) are present in areas with larger amounts of rock in the floodplain. In segments 12.7 and 18.5 localized areas of poor vigor and plant composition and high levels of grazing utilization were present.

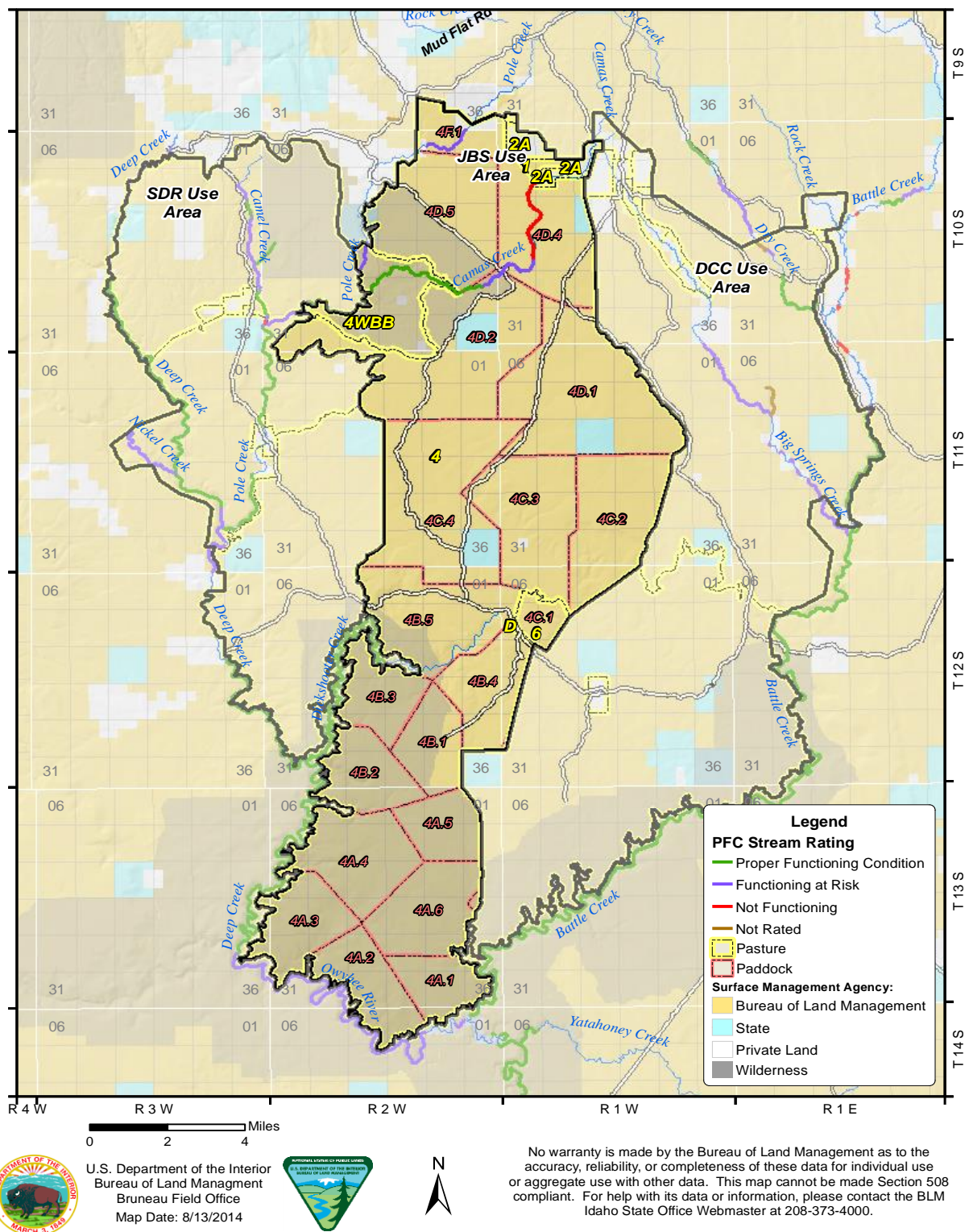


Figure 15. Functioning Condition for Streams in the JBS Use Area.

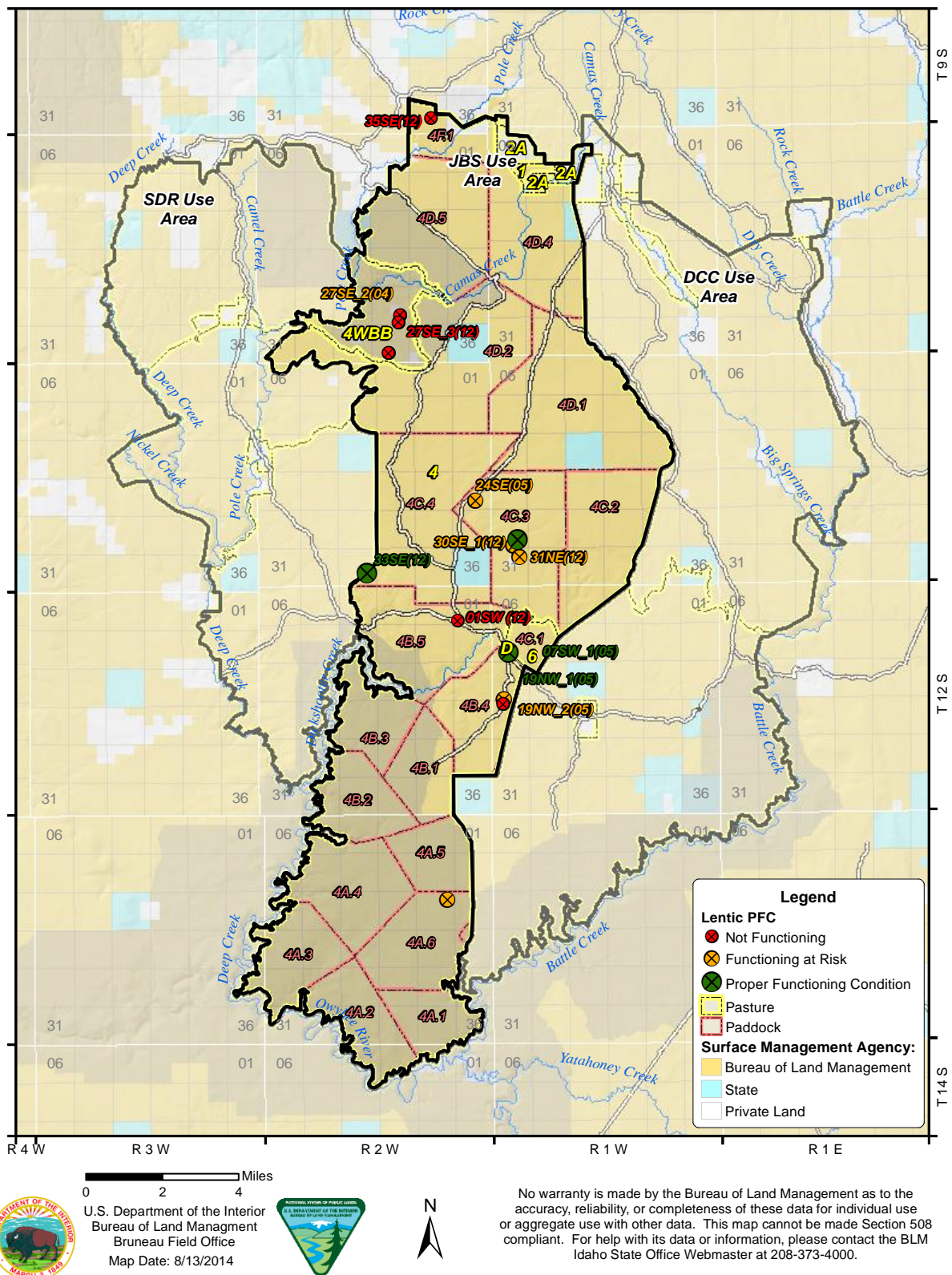


Figure 16. Functioning Condition for Lentic Wetlands in the JBS Use Area.

Springs

Pasture 4, A Paddocks (Early – Mid Spring Use)

One FAR spring and its associated springbrook (0.5-miles-long) is located in paddocks 4A1-6. The FAR rating was due to pugging and shearing of wetland soils. Channels have developed, and are down-cutting due to the presence of active headcuts in the wetland.

Table 8. Condition of wetland-riparian areas at springs located in Paddocks 4A1-4A6, JB&S Use Area, Big Springs Allotment, 2005.

Spring Name	Location	Percent Bare Ground	Functioning Condition	Wetland-Riparian Vegetation/Impacts to Wetland
unnamed	13S02W14 NE	20	FAR	sedges/rushes/willow; pugging and shearing in wetland area; three active headcuts are present
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition). Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-16 1999).				

Pasture 4, B Paddocks (Mid Spring Use)

Four springs are located within paddocks 4B1-4B5 of the JB&S Use Area. These include Dickshooter Reservoir Spring, Dickshooter Camp Spring, Anticipation Spring and an unnamed spring (Table 9). One of the four riparian-wetland areas located at springs in the B paddocks is in PFC. One spring was rated as FAR, and two were NF due to lack of vegetation and heavy soil compaction.

Table 9. Condition of wetland-riparian areas at four springs located in Paddocks B1-4B5, JB&S Use Area, Big Springs Allotment. All PFC data was collected in 2012.

Spring Name	Location	Functioning Condition ^a	Wetland-Riparian Vegetation/Impacts to Wetland
Dickshooter Camp	12S01W07SW	PFC	willows/forbs/sedges/rushes/grasses; <i>developed spring</i> with a concrete spring box that diverts water to a trough; light utilization of wetland vegetation on 6/20/2005.
Dickshooter Reservoir	12S02W_01_SW_1	NF	Spring is above a small reservoir. Extensive bare ground and bank damage. Area lacks diverse age class and diversity of vegetation.
Anticipation	12S01W19NW_2	NF	sedges/rushes/grasses; pond excavated in wetland; 2 active headcuts present. considerable trampling shearing of wetland soils , avulsions present
unnamed	12S01W19NW_1	FAR	sedges/rushes; heavy soil compaction and bare soils
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition). Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-16 1999).			

Dickshooter Camp Spring was in PFC. Two springs were in NF condition. Anticipation spring occurs above a stock pond which was developed sometime in the past. The development altered water flow patterns resulting in soil erosion (headcuts), and the concentration of livestock loitering at the pond has severely compacted the soil. Heavy livestock use at Dickshooter reservoir has caused heavy compaction and large amounts of bare ground. At the unnamed spring rated in FAR condition, vegetation, where it is present, has low vigor and occurs only in small patches. Soils are heavily compacted and sheared, the spring heads are severely damaged by deep trampling, cumulative soil loss, and headcuts are also present downstream of the springs.

Pasture 4, C Paddocks (Late Spring Use)

There are six spring wetlands in paddocks 4C2, 4C3, and 4C4. None have been developed. Two springs are in PFC and four are in FAR condition (Table 10).

Table 10. Condition of wetland-riparian areas at springs located in Paddocks 4C2, 4C3, and 4C4, JB&S Use Area, Big Springs Allotment (2005-2012 data).

Spring Name	Location	Functioning Condition ^a	Wetland-Riparian Vegetation/Impacts to Wetland
unnamed	11S02W24 SE	^b FAR	rushes/sedges/grasses; bare soil at spring source from trampling and shearing
unnamed	11S02W33 SE_1	^b PFC	rushes/sedges/grasses; little utilization of riparian vegetation on 7/31/12; little soil disturbance
Avandale	11S01W30 SE_1	^b FAR	sedges/rushes/grasses; pugging and trampling of wetland soils at head of spring
unnamed	11S01W30 SWSE_2	^a PFC	sedges/rushes/grasses; very little bare soil or disturbance
unnamed	11S01W30 SWSE_3	^a FAR	sedges/rushes/grasses; trampling of wetland soils at head of spring
unnamed	11S01W31 NE	^b FAR	sedges/rushes/grasses/forbs; lack of age class diversity
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition). Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-16 1999). ND = no data ^a from 2004-2005 assessment ^b from 2012 assessment			

Pasture 4, D and F Paddocks (Early Summer Use)

Five springs are located in these pastures, of which four were evaluated for functioning condition in 2012 (Table 11). The four spring wetlands that were evaluated were NF due to either high utilization of wetland vegetation, and/or disturbance of wetlands soils (trampling and pugging). At the springs rated in non-functioning condition (NF), riparian vegetation has low vigor, and often is present only on isolated high hummocks distributed through the wetland in open water. The open water areas should be densely occupied with OBLW plant species, instead, isolated hummocks are vegetated mostly with exotic Kentucky bluegrass, with lesser amounts of disturbance related Baltic rush and Nebraska sedge. Soils adjacent to the spring head are severely compacted and sheared, spring heads are severely damaged by deep trampling, cumulative soil loss, soil liquefaction, and headcuts. The fifth spring, located in the Camas Creek watershed was not evaluated for functioning condition because it is located

in a rugged rocky canyon, however GIS analysis (BLM-TR 1737-10, Revised 2001, BLM) indicates the 17-acre wetland is in FAR condition.

Table 11. Functioning condition of wetland-riparian areas at springs located in Wagon Box Basin (Pasture 4D3) and Paddock 4F1, JB&S use area, Big Springs Allotment, 2012

Spring Name	Location	Functioning Condition ^a	Wetland-Riparian Vegetation/Impacts to Wetland
Pasture 4D3 (WBB)			
A	10S02W27 SE_2	NF	sedges/rushes/bluegrass; vegetation lacks age diversity due to high utilization; pugging and hummocking of wetland soils; Kentucky bluegrass is increasing in cover
C	10S02W34 SW	NF	Sparse sedges/rushes and forbs present; extensive hummocking of wetland soils; headcuts forming, liquefied soils, avulsion.
B	10S02W27 SE_3	NF	sedges/grasses/forbs; vegetation lacks age diversity due to high utilization; compaction and pugging of wetland soils
Paddock 4F1			
unnamed	09S02W35 SE	NF	sedges/grasses/forbs; soils and vegetation at spring source sheared and trampled
unnamed	10S01W06 SWNW	^a FAR	This spring supports a 17-acre wetland (determined by GIS analysis) A pond is present at this site.
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition) Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-16 1999). ND = no data ^a Determined by satellite image evaluation (BLM-TR-10-1994, Revised 2001).			

Standard 3: Stream Channel and Floodplain

The locations of the stream segments are shown in Figure 15, with the labels located at the downstream end of each segment.

Pasture 4, A Paddocks (Early – Mid Spring Use)

About 26 miles of stream in the A paddocks have stream channels and floodplains in PFC. Riparian plant communities have adequate vegetative cover and bank-stabilizing species necessary for maintenance of stable channels and floodplains. The Owyhee River was in a strong upward trend for Standard 2, but in a static trend for Standard 3, a result of excess sediment.

Deep Creek

Deep Creek segments Deep-00.0 (11.7-stream-miles), and Deep-11.7 (5.9-stream-miles) were each rated in PFC (Table 12). The canyon of Deep Creek delineates the western boundary of the JB&S use area, and the eastern boundary of the Sierra del Rio use area. The lowermost 5-mile-long reach of Deep Creek forms the eastern boundary of the Owyhee Resource Area. The respective boundaries are unfenced, and rely only on geologic features to restrict livestock movement.

Deep Creek flows through a canyon with shear walls and significant amounts of bedrock in the floodplain. With few exceptions, the stream is mostly inaccessible to livestock. Streambanks of Deep Creek are vegetated with deep-rooted plant communities dominated by willows. Although all segments of Deep Creek are in PFC, the stream has excessive levels of sediment being delivered, in part, from upstream degraded stream reaches on private lands.

Owyhee River

The Owyhee River and its associated canyon form the southern boundary of the A paddocks. Livestock access to the river is often restricted by rocky or sheer canyon slopes. Many mid-channel bars are present, which cause channel instability at high flows and contribute to excess scouring of riparian areas. High levels of sediment are being delivered to the river from most tributary streams throughout the greater watershed. To the extent that the high sediment level is anthropogenically\ caused, natural background yield, or a combination of causes is unknown. The Owyhee River was rated in Functioning-at-Risk condition for Standard 3.

Table 12. Stream channel/floodplain indicators and functioning condition rating by stream segment, Paddocks 4A1-4A5, JB&S Use Area, Big Springs Allotment, 2005.

Stream Channel/Floodplain Indicators:	BLM Stream Segment		
	Deep 0.0	Deep 4.4	Owyhee River
Overall functioning condition	PFC	PFC	FAR
Stream miles	4.4	7.2	14.1
Riparian acres	7.9	17.5	unknown
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition) Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-15 1998).			

Pasture 4, B Paddocks (Mid Spring Use)

Stream Inventories/Assessments

Stream segments that have been assessed within or bordering paddocks 4B1 to 4B5 are in PFC. Deep Creek and much of Dickshooter Creek are located in canyon segments with significant amounts of rock in the floodplain that are inaccessible to livestock.

Dickshooter Creek

Dickshooter Creek (10.0-stream-miles) and its associated canyon occur in Paddocks 4B.5 and 4B.2. The stream is in PFC. The stream is highly confined by a narrow, rugged canyon that prevents livestock access. Areas inside the canyon that are not naturally scoured by stream flows are vegetated with deep-rooted vegetation and are hydrologically stable. Much of the stream has intermittent stream flows, but the lower two to three miles of stream have perennial pools of surface water. The stream channel of Dickshooter Creek was largely rock-armored and stable.

Pasture 4, C Paddocks (Late Spring Use)

No perennial stream segments occur within Pasture 4C1 or within paddocks 4C2-4C4 of the JB&S Use Area.

Pasture 4, D Paddocks and Wagon Box Basin (Early Summer Use)

The majority of the stream channels in this portion of the JB&S Use Area are in PFC or FAR condition with an upward trend (Table 13). A portion of Camas Creek is in FAR condition because of historical impacts that caused the stream to headcut.

Table 13. Riparian areas and riparian-wetland indicators, and functioning condition rating by stream segment, for Pasture 4 (Paddocks 4D2- 4D5 & 4F1, Pasture 4D3), JB&S Use Area, Big Springs Allotment, 2005.

Stream segment number	Camas 00.0	Camas 4.1	Camas 6.1	Pole 11.9	Pole 12.7	Pole 018.5
Functioning Condition	PFC	FAR-↑	NF	PFC	FAR	FAR
Stream miles	4.1	1.2	2.7	0.5	0.9	1.4
PFC (proper functioning condition), FAR (functional-at-risk), NF (nonfunctioning condition) Ratings were determined from examination of both riparian and channel/floodplain indicators (TR-1737-15 1998). ↑ = upward trend						

Camas Creek

The lower 4.1-mile-long segment of Camas Creek (CAMAS-00.0) is located in a rugged, rocky canyon (within Pasture 4D3) that restricts livestock use. This segment is in PFC (Table 55). The middle portion of Camas Creek (CAMAS-04.1) is located in a less confined canyon with less rock present in the floodplain (Paddock 4D2). This segment was rated in FAR condition mostly due to presence of active headcuts.

Camas Creek segment 6.1 (2.7-stream-miles) was rated in NF condition. Bank stabilizing riparian vegetation here is limited by the intermittent flow regime, heavy historic and on-going grazing levels, and historic and on-going bank shearing, and actively entrenching and widening stream channel. The entrenchment process has resulted in dewatering of the historic floodplain, and has greatly reduced the area suitable for occupation by deep-rooted, bank stabilizing, riparian plant species. In addition, loss of water storage in the streambanks (the hyporeic zone) reduces stream flow duration and volume, thus effectively de-watering the stream. This segment is in hydraulic disequilibrium, and in most areas the entrenched stream channel is over-widened (high width/depth ration) due to lateral migration. Many high vertical streambank characterize this reach, and active streambank bank erosion was estimated at >50%. In addition, the stream has straightened and lost much of its historic sinuosity, which has increased the water slope, thus increasing water velocity, which results in greatly increased erosion rates. Numerous active headcuts are present both in the main channel and on the adjacent floodplain.

Pole Creek

The middle portions of Pole Creek (Pole-11.9) upstream of the Camas Creek confluence are located in rugged, rocky canyon and in PFC. Another segment of Pole Creek is located in an unconfined low gradient valley and is in PFC, in large part because of the presence of extensive amounts of platy rock in the floodplain.

Standard 4: Native Plant Communities

Most of the upland vegetation in the Joseph Black & Sons Use Area is functioning properly and plant community monitoring suggests static or trends in the uplands. Although stocking rates vary somewhat in each pasture from year to year, all pastures are generally very lightly stocked in most years. In addition, in most areas, the duration of grazing is short, allowing for regrowth after use, dependent on the amount of moisture available.

A total of 34 field RHEs were completed in this Use Area during the 2004 field season. Based on the 2004 data, the RHEs in the south (A paddocks) and south central (B paddocks) parts of the JB&S Use Area showed more of a departure from reference conditions from those found in reference areas and ecological site guides for similar ecological types. However, most RHEs in these paddocks are still dominated by desirable decreaser grasses. In the C and D paddocks, most areas displayed good diversity and high grass vigor and reproductive capability. In general, RHEs on the bottom areas (some Churning Clay and some associated Clayey ecological sites) and those in the vicinity of water developments exhibited more of a departure than other areas.

Permittee photo plot/view photos have also been established in this Use Area and were primarily located in livestock preferred areas near water, salting sites or along livestock trailing routes and on fine soils within high livestock impact areas. The permittee photos largely reflect findings from BLM studies for this Use Area. Most JB&S photo sites have a static or upward trend. Photos show increases in decreaser and increaser grasses between 1993 and 2005; reduced continuity of ponded areas due to establishment of perennial grasses; a more roughened micro topography and greater litter cover; and replacement of decadent shrubs by newer, smaller ones. Similarly, all but one BLM long-term rangeland trend sites show static to upward trend in this Use Area.

Pasture 4, A Paddocks (Early – Mid Spring Use)

Rangeland Health Evaluation

An Inter disciplinary (ID) team sampled indicators of rangeland health at ten locations in all. One of the ten locations was sampled in 2004 and again in 2012. Two of the ten assessment locations are paired with long-term monitoring data. The assessment data indicate a general slight to moderate departure for the native plant community indicators (Table 14).

Table 14. Summary of upland data collected in Paddocks 4A1-4A6, JB&S Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend	Photo Trend ²	
					grasses	shrubs
Loamy 11-13	13S02W21	M	Decreased perennial grass production, more rabbitbrush, shrub decadence, cheatgrass and rabbitbrush common	No Data	No Data	No Data
Loamy 11-13	13S02W30	S-M	Sagebrush decadent; cheatgrass common; Bluebunch wheatgrass vigorous and dominant	No Data	No Data	No Data
Shallow Claypan 11-13	13S02W08	N-S	Near reference condition	No Data	No Data	No Data
Shallow Claypan 11-13	13S02W16	S-M	Bluebunch wheatgrass abundant and vigorous; Soft brome common	Static	√	√
Shallow Claypan 11-13	13S02W02	S-M	Decreaser grasses associated with shrub cover. Increasers more common in shrub interspace.	Static	√	√
Shallow Claypan 11-13	13S02W11 ³	S-M N-S	Improved to near reference condition in 2012	No Data	No Data	No Data
Shallow Claypan 11-13	13S02W15	S-M	Bluebunch and stipa under-represented, particularly in shrub interspaces.	No Data	No Data	No Data
Shallow Claypan 11-13	13S02W22	S-M	Cheatgrass common; deep-rooted perennial grasses under represented	No Data	No Data	No Data
Shallow Claypan 12-16	1302W13B		Sagebrush condition poor in	No	Static	Static

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend	Photo Trend ²	
					grasses	shrubs
			2012. Bare ground appears to be less extensive in 2012 than 1990s.	Data		
Shallow Claypan 12-16	13S02W27	S-M	Idaho fescue and bluebunch wheatgrass dominate shrub understory but slightly reduced in shrub interspaces.	No Data	No Data	No Data
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions. ² √ indicates that a photo trend site co-located with a NPFT site. ³ Site was sampled in 2004 and 2012. The rating for native plant conditions improved from S-M in 2004 to N-S in 2012.						

One of the Claypan RHEs (13S02W08) occurs on rubble land along the rim of the Owyhee Canyon, and has a stony surface which protects it from disturbance. That RHE showed the least departure from reference conditions of those within these paddocks, and was used as a reference area. Other Shallow Claypan and Loamy RHEs, while retaining all of their original components, exhibited more shrub decadence, rabbitbrush invasion, and cheatgrass encroachment than expected.

Plant Community Integrity

Plant community integrity and native species diversity indicators showed a slight departure from reference conditions. Decreaser grass cover is slightly less than expected at many of these RHEs; however most RHEs are still dominated by decreaser grasses. Rangeland Health Evaluations 13S02W27 (Shallow Claypan 12-16), 13S02W02 (concave inter-mound Shallow Claypan 11-13), 13S02W15 (convex intermound Shallow Claypan 11-13), and 13S02W21 (Loamy 11-13) have a greater than expected reduction in interspatial decreaser grasses.

In general, annual production in these paddocks is within 80% of expected. However, at RHEs with a larger reduction in interspatial grasses, production is on the low end of the range. Annual production was within 60 – 80% of expected at RHEs 13S02W21 and 13S02W15. Shrub productivity is similar to reference areas, except at the Loamy (13S02W21) RHE, where rabbitbrush cover is greater than expected. Leguminous species (lupine, clover, and milkvetch) were present at all RHEs, promoting nitrogen fixation.

Plant Vigor

Plant vigor varies among locations in these paddocks. In general, there are slightly more pedestalled bunchgrasses than expected, but the pedestalling observed is historic except at RHEs 13S02W02, 13S02W15, and 13S02W21. At all RHEs, bunchgrass crown decadence was slightly more than expected and was associated almost exclusively with pedestalling in Sandberg bluegrass plants. Few decreaser grasses show any evidence of recent crown die-off. Seedheads were seldom observed on interspatial decreaser grasses (except in the 4A4 paddock). Shrub decadence in the south / southwest portion of the A paddocks is common, particularly on the Loamy (13S02W30 and 13S02W21) RHE sites.

Noxious and Invasive Weeds

Noxious weeds were not observed. In general, invasive plants show a moderate to extreme departure at both Loamy RHEs in the 4A3 area; with cheatgrass and rabbitbrush common throughout. Cheatgrass

was also common on one of the concave inter-mound Claypan 11-13 (13S02W22) RHEs. In addition, soft brome was common on the convex intermound Claypan 11-13 (13S02W16) RHE. Three additional RHE sites throughout the area showed a slight to moderate departure from reference conditions for invasive plants, with scattered and isolated cheatgrass occurrences.

Rangeland Trend

The overall trend at site **13S02W16** has been static to slightly upward. Idaho fescue has increased ten to 20 percent since 2000, while needlegrass has been static. Sandberg bluegrass and onespoke oatgrass frequencies declined for the same time period, while squirreltail remained static. Bluebunch wheatgrass has declined ten to 20 percent since 2000. Low sagebrush frequency has been declining gradually since the 1980s, though photographs depict a strong sagebrush component in 2012. Perennial forbs have been highly variable. Phlox has been static since 2000, while desert parsley increased substantially. Photograph monitoring of this site supports an overall static to upward trend. Photographs depict a trend of greater native plant biomass and less bare ground at the site since 1991, suggesting an improvement in native plant health and vigor. The RHE 13S02W16, located nearby showed a slight to moderate departure from reference conditions in 2004.

Trend site **13S02W02** shows similar patterns in native plant community conditions. The overall trend at this site has also been static to slightly upward. Needlegrass has increased five to 15 percent since 2000 while Sandberg's bluegrass and oatgrass have both remained static. Low sagebrush frequency has been declining gradually since the 1980's. Photograph monitoring supports the decline in sagebrush frequency, though low sagebrush co-dominated the plant community in 2012. Forbs have been highly variable. Phlox frequency has declined since 2000, while desert parsley increased substantially. Photographs are consistent with a slight overall improvement in native plant community vigor, with a general improvement in grass cover and decline in sagebrush. The 2004 RHE at this location shows a slight to moderate departure from reference conditions.

At photo site **13S02W13B**, photo trend was static to upward for increaser grasses, static for decreaser grasses and static for shrubs between 1986 and 2012. Within the photo plot, recruitment of Sandberg bluegrass and squirreltail, and turnover in low sagebrush occurred. Crown die-off occurred on Idaho fescue between 1986 and 1991, but two additional plants established between 1991 and 1995. After 1995, there was a loss of the smaller Idaho fescue plants but no change in status of the larger Idaho fescue plants. The 2004 view photos again have more bare ground, like many other locations. Bare ground was less prevalent in 2012. Although utilization on Idaho fescue was moderate in 2004 within the photo plot; in the other years there was little evidence of use. Caterpillars appeared to be affecting the vigor of some sagebrush plants in 2012.

Permittee Photo Points

The 2005 photos were taken in September and reflect full plant growth, while earlier photos were taken in May and June, when primarily crowns and leaves were visible. However, the lack of old material on interspace grass crowns in the 1993 to 1995 photos suggests that either seedheads had not been produced the previous year or that they had been completely consumed prior to the date of the photograph. Particularly on the Loamy sites, the regrowth (or growth) for the year exhibited marked vigor.

Eight permittee photo plots / view photo sites are located in the A paddocks. The photos themselves are located in the project file. BLM interpretation is summarized in Table 15.

Table 15. Trend in abundance of perennial grasses and shrubs in JB&S photo plots and view photos, Paddocks 4A1-4A6, 1993-2005.

Transect	Ecological Site	Evaluation Period	Grasses		Shrubs/ Trees	
			Plot	Photos	Plot	Photos
13S02W34	Shallow Claypan 11-13	1993-1994	I>	I>	>	>
13S02W35	Shallow Claypan 11-13	1994-2005	D [^] , I [^]	I [^]	>	>
13S02W28	Shallow Claypan 12-16	1993-2005	D><<, I [^]	D [^] , I [^]	>	><<
13S02W34B	Loamy 11-13	1994				
13S02W30	Loamy 11-13	1993-2005	D [^] , I [^]	D [^] , I [^]	<<	<<
13S02W09	Shallow Claypan 12-16	1993-2005	D> [^] , I [^]	D [^] , I [^]	<<	
13S02W03	Loamy 11-13	1993-1995	D>	D>	>	>
13S02W14	Shallow Claypan 12-16	1994-2005	D [^]	D [^] , I [^]	> [^]	>
Key- D= decreaser grasses, collectively, I= increaser grasses, collectively; <<=downward, >=static, ^=upward						

Photo site 13S02W34 (DS A.1-1) is located in an old burn about ½ mile west of Wiley Reservoir. The site was visited for only the first two years after changes in livestock management practices were adopted. No change was observed within the photo plot (pedestalled Sandberg bluegrass), differences in appearance primarily reflected differences in weather, and no seedheads were evident. Decreaser grasses were not recognizable as such.

Photo site 13S02W35 (DS A.1-2) is located about 100 yards east of Wiley Reservoir. Within the photo plot, there was a marked reduction in bare ground, with replacement by Sandberg bluegrass. An additional bluebunch wheatgrass plant had established. The protective shrub was largely gone, but new ones had established. The soil surface had a more roughened micro-topography from more Sandberg bluegrass crowns and also from hoof imprints. In 1994, no seedheads had been evident on any interspace grasses.

Photo site 13S02W28 (DS A.2-1) is located about 1/4 mile northeast of Dead Tree Reservoir and about 20 paces from a salt barrel location that is used each year. Within the photo plot, Sandberg bluegrass plants were more abundant, bare (ponded) areas were smaller, the soil surface was more roughened, and seedheads were more evident on both interspace and shrub coppice grasses. The same Idaho fescue plant was present, but a portion of the crown had died; however, remaining portions were vigorous. New individuals may be present, but are difficult to identify reliably. In 1994, no seedheads had been evident on any interspace grasses.

Photo site 13S02W34B (DS A.2-2) is located on top of a ridge about 1/3 mile east of Rock Point Reservoir. No repeat photos are available since 1994.

Photo site 13S02W30 (DS A.3-1) is located about 300 feet west of Warm Springs Reservoir and about 25 paces from the Dickshooter Ridge road, and nearly coincides with RHE worksheet 13S02W30, which was in reference condition in 2004. Within and around the photo plot, additional decreaser grasses were present, particularly in shrub interspaces and some of the old decadent shrubs are reduced or gone. Trends in bluegrass and seed head abundance, size of bare areas, and soil surface roughness were

consistent with other JB&S photo plots. In 1994, no seedheads were evident on any interspace grasses. Any decreasers present are therefore difficult to identify, but none are visible under the shrubs.

Photo site 13S02W09 (DS A.4-1) is located about 0.4 miles west of Kincaid Reservoir and about 25 paces from a road at a salt lick. It is located within the largest continuous stand of the Basin big sagebrush community within the A paddocks. Within and around the photo plot, additional decreaser grasses were present. Similar trends in bluegrass and seed head abundance, size of bare areas, and soil surface roughness occurred. In 1994, some bluebunch wheatgrass and Idaho fescue plants can be seen, but occur primarily in association with the shrubs, and no seedheads were evident on any interspace grasses.

Photo site 13S02W03 (DS A.5-1) is located on a small mound of deeper soil about 3/4 mile west of Justo Reservoir. Paddock 4A5 was not grazed in 1993 or 1994 according to the JB&S grazing schematics. The photo plot had primarily vigorous bluebunch wheatgrass within it in 1993, and no seed heads had formed. Less growth on the same plants reflected adverse growing conditions in 1994. Additional seedlings were evident in 1995, but establishment cannot be determined since no repeat photos are available.

Photo site 13S02W14 (DS A.6-1) is located about 200 yards northeast of the wet meadows along the upper West Fork of Old Stove Draw, but is surrounded by rubble land. Within and around the photo plot, additional decreaser grasses were present, primarily bluebunch wheatgrass. Perennial grasses (especially seed heads) were more prominent, obscuring the sagebrush plants and reflecting exceptional growing season precipitation. In 1994, the appearance of the large, robust decreaser grasses suggests that no defoliation had occurred during the past two growing seasons, and is consistent with the grazing schematics. Seedheads were evident on interspace grasses, but the biomass was primarily leaves.

Pasture 4, B Paddocks (Mid Spring Use)

Rangeland Health Evaluation

The 2004 data indicate a slight to moderate departure for the native plant community indicators (Table 16)

Table 16. Summary of upland data collected in Paddocks 4B1-4B5, JB&S Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments
Shallow Claypan 11-13	12S02W24	S-M	Shift from desired deep rooted species to shallow rooted species in shrub interspaces. Higher plant vigor under shrub canopies
Shallow Claypan 12-16	12S02W11	S-M	Grasses between shrubs less vigorous than those beneath canopies
Shallow Claypan 12-16	12S02W26A	S-M	Heavy bunchgrass utilization, Idaho fescue pulled up w/ roots attached indicates use when soils wet, reduced vigor, dead crowns. Sagebrush over-represented
Shallow Claypan 12-16	12S02W26B	S-M	Heavy bunchgrass utilization, Idaho fescue pulled up w/ roots attached indicates use when soils wet, reduced vigor, reduced vigor, dead crowns on Idaho fescue plants very common.

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments
Shallow Claypan 12-16	12S02W33	N-S	Near reference condition
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.			

Within the B paddocks, RHE 12S02W33 showed the least departure from reference conditions. It is interspersed with rubble land, and the stony surface protects it from disturbance. RHEs on fine-soiled areas (12S02W26A and 12S02W26B) exhibited more departure than those on stony or rocky soils. Both RHEs, which are located in the 4B1 paddock, also had heavy use and minimal regrowth at the time of the visit in 2004.

Plant Community Integrity

Plant community integrity and native species diversity indicators show a slight to moderate departure from reference conditions on both fine-soiled RHEs and none to a slight departure on rubble land or inter-mound RHEs. Decreaser bunchgrasses are below potential at 12S02W26A, 12S02W26B, 12S02W11, 12S02W24; however, desirable decreaser grasses are dominant or common at all RHEs. Annual production in the B.1 paddock ranges from 60 to 80% of the expected production due to the lack of large bunchgrasses in the community. Elsewhere, production was normal. Overall, shrub productivity is similar to reference areas. Desirable leguminous species (lupine, clover, and milkvetch) were reported at four of the five RHEs.

Plant Vigor

Plant vigor showed a moderate to moderate to extreme departure for the low mound RHEs in 4B1 in 2004; with varying degrees of bunchgrass pedestalling (mostly historic), bunchgrass crown die-out, and decreased vigor. Plucking of Idaho fescue plants, associated with heavy utilization, was also noted at both sites. At the two inter-mound Shallow Claypan RHEs (12S02W11, 12S02W24) bunchgrass crown decadence was slightly more than expected and was associated almost exclusively with pedestalling in Sandberg bluegrass plants. The rubble land Shallow Claypan (12S02W33) RHE, which has an extremely stony surface, shows good plant vigor, seed head production and reproductive capability. Seed head production and reproductive capability were below expected on interspatial perennial bunchgrasses at all other RHEs; however, vigor and seed head production were good on perennial bunchgrasses that were located under shrub canopies.

Noxious and Invasive Weeds

Noxious weeds were not observed. Invasive plants show none to a slight degree of departure from reference conditions. Cheatgrass was scattered in small, discontinuous patches at two of the five RHE sites.

Rangeland Trend

Permittee Photo Points

Six permittee photo plots/view photo sites are located in the B paddocks. The results of BLM interpretation are shown in Table 17.

Table 17. Trend in abundance of perennial grasses and shrubs in JB&S photo plots and view photos, Paddocks 4B1-4B5, 1993-2005.

Transect	Ecological Site	Evaluation Period	Grasses		Shrubs/ Trees	
			Plot	Photos	Plot	Photos
12S02W35	Loamy 11-13	1993-2005	D>, I^	D>, I^	>^	><<
12S02W33B	Shallow Claypan 12-16	1993-2005	D^	D^	^	>^
12S02W21	Shallow Claypan 12-16	1993-2005	D>, I>	D^, I^	^	>
12S01W19	Shallow Claypan 12-16	1993-2005	D^, I^	D^, I^	>	>
12S01W07	Shallow Claypan 12-16	1994-2005	D^, I^	D^, I^	>	>
12S02W02	Shallow Claypan 11-13	1993-1995	D^	D^	^	>
Key- D= decreaser grasses, collectively, I= increaser grasses, collectively; <<=downward, >=static, ^=upward						

Photo site 12S02W35 (DS B.1-1) is located about 0.6 mile west of Sleepy Reservoir and about 40 paces from the main road across The Flat. Within the photo plot; bare areas were smaller, somewhat more Sandberg bluegrass plants were present, the soil surface was more roughened (less ponded), older, decadent shrubs were gone or replaced by younger shrubs, and seedheads were more evident on both interspace and shrub coppice grasses. The Idaho fescue plant was obscured by expansion of shrubs and a new individual of bluebunch wheatgrass was present. In 1994, bunchgrasses were not pedestalled, but larger areas of ponded bare ground were present.

Photo site 12S02W33B (DS B.2-1) is located about 0.75 mile northwest of Black Canyon Reservoir about 50 paces from the main cattle trail near a salt barrel used every year. Substantially more Idaho fescue plants and additional shrubs were present in and around the photo plot in 2005. The high perennial grass production reduced the prominence of shrubs and of bare areas in the view photos; but bare areas were smaller, with a rougher soil surface. Large areas of bare ground within the photo plot in 1994 appear to be convex frost boils rather than concave ponded areas; and seedheads were evident on many bunchgrasses, consistent with very light use reported by the grazing schematic. Ponded areas had been prevalent in the 1993 photos.

Photo site 12S02W21 (DS B.3-1) is located on a ridge top about 0.5 mile northwest of Joe's Reservoir (pages 192-193). Within the photo plot in 2005, the same Idaho fescue plants were present in the photo plot, with additional ones present outside the plot. Additional shrubs were also present. Bare areas in the photo plot were still ponded; however, bunchgrasses were less pedestalled. More biomass was present on the crowns in 1994 than in 1993, and seedheads were also more evident on interspace grasses, consistent with the lighter stocking rate.

Photo site 12S01W19 (DS B.4-1) is located about 0.1 mile north of Anticipation Spring Reservoir, about 20 paces from the main road. It is located on a slope so that bare ground had coalesced into flow patterns and has some surface rock. In 2005, substantially more Idaho fescue and Sandberg bluegrass plants were present in and around the photo plot, and individual shrubs were larger. Some larger stones in the photo plot were not visible in earlier photos and small stones were now much less prominent. The continuity of former flow patterns was substantially reduced by establishment of perennial grasses, with a rougher micro topography. In 1994, few or no seedheads were evident on interspace grasses.

Photo site 12S01W07 (DS B.4-2) is located just outside the fence of the Dickshooter Cabin horse pasture, about 25 paces from the fence. It also has a few surface rocks. Within and around the photo plot, substantially more Idaho fescue and Sandberg bluegrass plants were present, and individual shrubs were larger. Shrubs were less prominent overall because of the high perennial grass production. The continuity of ponded areas was substantially reduced by establishment of perennial grasses, with a rougher soil surface and greater litter cover. In 1994, few seedheads were evident on interspace grasses.

Photo site 12S02W02 (DS B.5-1) is located several hundred feet across the road from The Mine Reservoir. It is a concave inter-mound low sagebrush site, with surface rocks and a complete cover of gravel. Within the photo plot in 2005, more shrubs were present and substantially more Thurber needlegrass plants were present in and around the photo plot. Shrubs were less prominent in the view photos because of the high perennial grass production in 2005. In 1994, seedheads were evident on the interspace grasses even though cattle were present in the photos.

Pasture 4, C Paddocks (Late Spring Use)

Rangeland Health Evaluation

The 2004 data indicate none to a slight departure for the native plant community Indicators (Table 20).

Table 18. Summary of upland data collected in Paddocks 4C1-4C4, JB&S Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend
Churning Clay 12-16	12S02W02	S-M	Perennial grasses in shrub interspaces utilized, display decreased vigor. Better condition grasses generally harbored by shrub canopies. Annual forbs common.	No Data
Clayey 12-15	11S01W34A	N-S	Near reference condition	No Data
Clayey 12-15	11S02W26	S-M to N-S	Cheatgrass and bulbous bluegrass scattered	No Data
Clayey 12-15	11S02W25	S-M	Bulbous bluegrass scattered to common	No Data
Stony Clayey 12-16	11S02W15		. No Data	Static
Stony Clayey 12-16	11S02W24	N-S	Near reference condition	No Data
Stony Clayey 12-16	11S02W22	N-S	Near reference condition	No Data
Shallow Claypan 12-16	11S02W25		No Data	Static to Upward
Loamy 13-16	11S01W34B	N-S	Desired grasses slightly below potential. Diverse plant community.	No Data
¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions, M-E = moderate-extreme departure from reference conditions.				

RHEs on preferred areas (Churning Clay and some associated Clayey ecological sites, particularly those around water developments) exhibited more departure from reference conditions than those in stony areas. RHE 12S02W02, located 0.3 miles from School Section Reservoir, is the best example.

Plant Community Integrity

Plant community integrity and native species diversity indicators show none to a slight departure from reference conditions and most RHEs appear to have good diversity. The exception is the Churning Clay (12S02W02) RHE in the extreme southern portion of paddock 4C4, where perennial grasses are substantially reduced with a subsequent increase in annual forbs. Annual production is within 80% of expected and is from a diversity of sources, except at RHE 12S02W02 where production was reduced due to a decrease in interspatial grasses. There is a slight increase in shrub productivity at three RHEs (Clayey 11S01W34A, Loamy 11S01W34B, and Churning Clay 12S02W02) and a slight reduction in shrub productivity at the Stony Clayey (11S02W22) RHE. Leguminous species (clover) were reported at two RHE sites.

Plant Vigor

Plant vigor shows none to a slight departure from reference conditions, with most areas having high grass vigor, reproductive capability, and adequate seed head production. The greatest degree of departure was observed at the Loamy (11S01W34B) and Churning Clay (12S02W02) RHEs, where there was a slight reduction in grass vigor and seed head production.

Noxious and Invasive Weeds

Noxious weeds were not observed. Bulbous bluegrass was scattered to common at two of the seven RHE sites. Cheatgrass was scattered at one site. Invasive plants were located at the Clayey RHEs located in the 4C4 area.

Rangeland Trend

Given the slow, but steady increase in Idaho fescue frequency and relatively static levels of most other native plants at trend site **11S02W25**, the overall trend has been static to slightly upward since 1983. Frequency of Idaho fescue has increased gradually since 1983. Sandberg's bluegrass frequency increased slightly from 2004 to 2012 following a minor decline from 2000 to 2004. Squirreltail has increased since 1995, with 2012 readings matching those recorded in the 1980s. Oatgrass has been static since 1983. Sagebrush frequency has declined slightly from 1983 to 2012. Photographs support this decline in sagebrush frequency at the site, though sagebrush remains a major component of this plant community. Phlox appears to have increased slightly since 1987, though it remains a minor component of this plant community. Desert parsley has fluctuated greatly since 1987, declining 50 percent from 2000 to 2004, then recovering the same amount by 2012. Photograph monitoring at this site depicts an increase in Idaho fescue foliar cover between 1983 and 2000 and an overall increase the amount of native vegetation rooted within the photo plot since 1983.

The overall trend at trend site **11S02W15** has been static since 1983. Frequency of Idaho fescue at increased slightly from 2004 to 2012, following a gradual decline that began in 1987. The 2012 readings for Idaho fescue closely matched those recorded in 1987. Needlegrass frequency has declined five to ten percent at this site since 1987, though needlegrass has never been a major species at the site since monitoring began. Oatgrass has been increasing steadily at this site since monitoring began. Oatgrass frequency has increased by approximately 50 percent at this site since 1983. Sandberg's bluegrass frequencies have been static since 1987, with only minor fluctuations. Squirreltail frequency variation has been greater than that of Sandberg's bluegrass. Squirreltail has declined approximately ten percent at the site since 2000, following equal declines and recoveries in previous years. Low sagebrush frequency has been static since 1995, following a decline of between 5 and ten percent in previous years. Phlox has fluctuated at this site since the 1980s. Phlox has not been a major component of this plant community since BLM monitoring began. Desert parsley has been static at the site after increasing from 1987 to 2000.

Photograph monitoring generally supports the frequency data. Apparent trend was downward for grasses and static for shrubs between 1983 and 2012. Increaser grasses and forbs appear to be

increasing in the photo plot, while shrubs and decreaser grasses have declined. The Idaho fescue plant originally present in the 1983 photos was reduced to a remnant by 2000. By 2012, no fescue plants had returned to the photo plot, though Idaho fescue is still visible in 2012 view photographs.

Permittee Photo Points

The JB&S photo plots have few surface stones, and are preferred by cattle to the predominant Stoney Clayey ecological sites within these pastures/paddocks. The study sites in the C and D paddocks had more perennial grass biomass evident in the initial set of photos than did those in the A and B paddocks, which is not entirely a function of photo timing. The 2005 photos were taken in September and reflect full plant growth, while many of the earlier photos in the C paddocks were taken in July and August, before the plants were fully cured. However, the lack of old material (particularly, gray material) on interspace grass crowns in those 1993 to 1995 photos suggests that any carryover material had been completely consumed prior to or early in the evaluation period. The regrowth (or growth) for each year exhibited marked vigor, even in 1994, when climatic conditions were unfavorable. The 1993, 1994, and 2005 photos in the D paddocks were all taken in August, September, and October and reflect full plant growth and fully cured plants.

Five permittee photo plots/view photo sites are located in the C paddocks. The photos themselves are maintained in the project record and the results of BLM interpretation are shown in Table 19. Photos were retaken in 2005 only for the two photo sites located in paddock 4C4, 11S02W25C and 11S02W36.

Table 19. Trend in abundance of perennial grasses and shrubs in JB&S photo plots and view photos, Paddocks 4C1-4C4, 1993-2005.

Transect	Ecological Site	Evaluation Period	Grasses		Shrubs/ Trees	
			Plot	Photos	Plot	Photos
12S01W07A	Shallow Claypan 12-16	1993-1995	D [^] ,I>	D [^] ,I>	<<	<<
11S01W34C	Clayey 12-15	1993-1994	D>, I>	D>, I>	<<	<<
12S01W06	Clayey 12-15	1993-1994	D>, I>	D>, I>	>	>
11S02W36	Clayey 12-15	1993-2005	D [^] , I [^]	D [^] , I [^]	>	><<
11S02W25C	Clayey 12-15	1993-2005	D [^] , I [^]	D [^] , I [^]	>	>
Key- D= decreaser grasses, collectively, I= increaser grasses, collectively; <<=downward, >=static, ^=upward						

Photo site 12S01W07A (DS C.1-1) is located on a toe slope of a drainage about 1/2 mile east of Dickshooter Camp, and was visited for only the first three years after changes in livestock management practices. In 1994, the Idaho fescue and Sandberg bluegrass pedestals were gone, the crowns emerged directly from the soil surface, and individual Idaho fescue plants were more productive, although climatic conditions were less favorable. In 1995, a more favorable year, the grass crowns were larger and more prominent, and the shrub component was less prominent than in 1993. Each year, one of the cattle herds moved through this pasture in early June. While current utilization was evident only in 1994, the lack of old material on the crowns in 1995 suggested abundant regrowth.

Photo site 11S01W34C (DS C.2-1) is located in D Bar Basin near Coffee Pot Reservoir (page 201), on an alkali sagebrush site. Within the photo plot in 1994, the Idaho fescue plants were larger, and a few seedheads were present. The shrubs showed mortality or at least less leaf production. Bare (ponded) areas appeared the same or slightly larger, primarily due to smaller/fewer shrubs. In 1993, no seedheads were evident on any grasses. Pedestalling was not marked in either year.

Photo site 12S01W06 (DS C.3-1) is located on a large toe slope adjacent to the drainage from Avendell Spring. In 1994, the Idaho fescue plants were larger and more productive, although seedheads were not visible. The shrubs showed less leaf production, but the same ones were present; and forbs were also less prominent, reflecting lower precipitation. Substantial areas of bare ground in and around the photo plot are visible in both years. Although ponding is normal on Clayey ecological sites, the 1994 photos appear slightly less crusted.

Photo site 11S02W36 (DS C.4-1) is located in a drainage collection basin about 1/4 mile southwest of School Section Reservoir. Within the photo plot, formerly unvegetated areas had been colonized by both Sandberg bluegrass and Idaho fescue; ponded areas were much less evident, and both total biomass and seed head production were greater. Turnover of individuals occurred in the shrub population. Although individual shrubs were more productive in the view photos, the shrub stand was less prominent after 1995. In the initial October 1993 photos, live Idaho fescue plants are scarce, closely grazed and had very small crowns. During the next two years, individual grasses were substantially more productive, and abundant seed heads were produced in 1995.

Photo site 11S02W25C (DS C.4-2) is located on another part of the same drainage collection basin about 1 mile north of School Section Reservoir. It is similar to DS-C.4-1, but closely adjoins Stony Clayey ecological sites. Within and around the photo plot in 2005 bare ground is reduced, replaced by both Idaho fescue and Sandberg bluegrass. Shrubs are still absent in the photo plot, with some turnover in the view photos; but grasses now dominate the site. In the initial photos, a few Idaho fescue plants within the photo plot have seedheads, but many have been grazed to a moderate level. In 1994, Idaho fescue plants were larger, a few more were evident, and utilization was lighter for the stand as a whole.

Pasture 4, D and F Paddocks and Wagon Box Basin (Early Summer Use)

Rangeland Health Evaluation

An ID team sampled rangeland health attributes at 13 sites in 2004. Two of the 13 sites were sampled again in 2012. Of the two sites sampled in 2012, one site (11S01W09) was unchanged from 2004 conditions and the other exhibited a moderate decline in native plant community condition, due largely to decadent sagebrush. The 2004 data for the D and F1 paddocks generally indicate none to a slight departure for the native plant community Indicators (Table 20).

Table 20. Summary of upland data collected in Paddocks 4D1-4D2, 4D4-4D5, and 4F1 and in Wagon Box Basin (Pasture 4D3), JB&S Use Area, Big Springs Allotment, 2004.

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend	Photo Trend ²	
					grasses	shrubs
Churning Clay 12-15	10S02W11	S-M	Bulbous bluegrass common; appropriate amount of organic matter in soil; bunchgrasses under represented.	No Data	No Data	No Data
Churning Clay 12-15	10S02W15	S-M to N-S	Reduced bunchgrass vigor and reproductive capability, some bunchgrass root exposure, dead crowns	No Data	No Data	No Data
Churning Clay 12-15	10S02W24	N-S	bunchgrasses under represented	No Data	No Data	No Data

Ecological Site	Location	RHE Condition ¹ Biotic	RHE Comments	NPFT Trend	Photo Trend ²	
					grasses	shrubs
Clayey 12-15	10S02W13	N-S	Dominated by forbs and shrubs	No Data	No Data	No Data
Clayey 12-15	11S02W03	N-S	Sagebrush slightly over represented, decreases slightly under represented	No Data	No Data	No Data
Clayey 12-15	10S01W30	N-S	Idaho fescue and needlegrass dominate	No Data	No Data	No Data
Clayey 12-15	10S02W14	No Data	No Data	Static to Downward	√	√
Clayey 12-16	10S01W21	N-S	Near reference condition	Static	√	√
Stony Clayey 12-16	10S02W25	No Data	No Data	No Data	Static	Downward
Stony Clayey 12-16	11S01W14	N-S	Idaho fescue vigorous and recruiting	No Data	No Data	No Data
Stony Clayey 12-16	11S02W10	N-S	Idaho fescue is dominant veg cover	Static to Downward	Downward	Static
Stony Clayey 12-16	11S01W09 ³	N-S (2004) N-S (2012)	Reference condition in 2004; decadent sagebrush in 2012; forbs diverse	No Data	No Data	No Data
Shallow Claypan 12-16	10S02W28A ³	N-S (2004) M (2012)	Near reference condition in 2004 but highly decadent shrub stands in 2012.	No Data	No Data	No Data
Shallow Claypan 12-16	10S02W28B	S-M	Cheatgrass scattered; decreases slightly under represented	No Data	No Data	No Data
Shallow Claypan 12-16	10S02W34B	S-M	Decreased perennial grass production, autumn willowweed encroaching on interspaces	Static to Upward	√	√
Clayey 12-15	10S02W34A	No Data	No Data	No Data	Upward	Static

¹ N-S = none-slight departure from reference conditions, S-M = slight-moderate departure from reference conditions, M = moderate departure from reference conditions.
² √ indicates that a photo trend site co-located with a NPFT site.
³ Location was sampled in 2004 and 2012.

The 2004 data for Wagon Box Basin (Pasture 4D3) indicate a slight to moderate departure for indicators of native plant community integrity. One of the Claypan (10S02W28A) RHE sites was biotically near potential, and was used as a reference area in 2004. However, this site was not used for a reference area in 2012 because it exhibited moderate levels of native plant mortality and decadence, at that time.

Plant Community Integrity

Native plant community integrity in the Clayey and Stony Clayey ecological sites exhibited slight, if any departure from reference conditions. Although decreaser grasses were underrepresented as a group in some clayey sites, decreaser grasses were still the primary grass component and species diversity was similar to reference conditions. Conditions were slightly less favorable at two of the three Churning Clay RHEs where decreasers were under represented and a combination of annual forbs and increaser grasses were dominant. The Shallow Claypan ecological sites are located primarily in Wagon Box Basin but elsewhere too, also supported slightly to moderately less decreaser grass than reference conditions. Sagebrush tended to be over represented in 2004. One of these RHEs (10S02W34B) was co-located with a long- term BLM and with a JB&S trend site, where Idaho fescue frequency has been static following a ten to 20 percent increase between 1983 and 1995.

Annual production at all but one RHE site was within the natural range of variation for reference conditions. The exception was at the wagon box basin RHE site 10S02W34, where annual production was depressed by 20 to 40 percent of potential in 2004. Although shrub productivity in Wagon Box Basin was proportionally high at some sites in 2004, drought and aroga moth infestations appear to have reduced shrub productivity. By the 2012 assessment, patches of low sagebrush in wagon box basin appeared to be decadent or dying. One RHE (11S02W10) had a slight reduction in low sagebrush in 2004. Leguminous species (clover) were reported at six of the 13 RHE sites in 2004.

Plant Vigor

Plant vigor generally shows none to a slight departure at the Clayey RHEs; with most areas having high grass vigor, adequate seed head production, and only occasional historic pedestalling of grasses. The greatest departure was observed at the Churning Clay RHEs, particularly at 10S02W15, where there was a reduction in interspatial grass vigor and seed head production and some large pedestals showing poor vigor, some root exposure, and some mortality. These pedestals were both historic and active. At other Churning Clay RHEs, plant vigor was good where perennial bunchgrasses were protected from disturbance.

Plant vigor at Claypan RHEs in Wagon Box Basin shows a slight to moderate departure from reference conditions. The dominant indicator was a greater than expected amount of pedestals on mixed grass species. Common mortality, bunchgrass crown die-out and root exposure were associated with pedestals. Based on RHEs, these pedestals were mainly historic.

Noxious and Invasive Weeds

Noxious weeds were not observed in 2004 or 2012. Invasive plants at the Clayey RHEs show none to a slight degree of departure, except at one Churning Clay site (10S02W11) where bulbous bluegrass was common in areas. Invasive plants were also noted Wagon Box Basin, where cheatgrass was scattered and juniper appeared to be encroaching. Autumn willowweed (a weedy annual species) was encroaching on shrub interspaces at RHE 10S02W34B. No invasive plants were observed at RHE 10S02W28A in 2004. Bur buttercup and bulbous bluegrass were also noted in scattered areas along roads in these paddocks.

Rangeland Trend

The overall trend at NPFT site **10S01W21** has been static since 1983. Onespike oatgrass frequency has increased steadily since 1983, up 40 to 50 percent. Squirreltail had been static at the site but decreased ten to 20 percent between 2004 and 2012. Idaho fescue has remained static. Low sagebrush appears to be on a gradual downward trend, decreasing five to 15 percent since 1987. Phlox frequency is up five to 15 percent since 2000, while desert parsley is down by approximately the same amount. Photographs indicate a static to slightly upward trend. While the overall appearance of the plant community hasn't changed, Idaho fescue cover has increased in the photo plot, while other species have remained static.

This site is extremely stony, and little if any utilization is visible in the trend photos. The associated RHE showed none to a slight departure from reference conditions.

The overall trend at NPFT site **11S02W10** has been static to downward. Needlegrass frequency has remained static since 2000, after declining five to ten percent. Needlegrass has not been a major component of this plant community. Idaho fescue frequency has been static since 2000. Fairly wide fluctuation of this long-lived species in previous study years suggests sample error. Both Sandberg's bluegrass and squirreltail have been static. Onespike oatgrass frequency is up five to ten percent since 1983. Frequencies of low sagebrush have been static since 2004, following a ten to 20 percent decrease. Phlox and desert parsley have been static. Photographs show a downward trend for Idaho fescue, static trend for shrubs, and upward trend for both Sandberg's bluegrass and oatgrass between 1983 and 2004. Bunchgrass crown die-out, pedestalling and a transition from decreaser grasses to increaser grasses are apparent. Native plants appear to have filled more gaps in the photo plot from 1995 to 2012. The current understory dominants in the photo plot are Sandberg bluegrass and onespike oatgrass, which are typical of drainages. Forbs are also periodically prominent. The nearby RHE showed none to a slight departure from reference conditions. This site is also extremely stony.

Trend site **10S02W14** is located in an ephemeral drainage. Consequently, the dominant sagebrush is Owyhee sage (*Artemisia papposa*), and forbs are periodically prominent on the site. The overall trend has been static to downward since 2000. The current understory dominants are Sandberg bluegrass and squirreltail, which may withstand frequent ponding better than Idaho fescue. Photograph monitoring suggests a decline in that native plant community health since 2000. Prior to peaking in 2000, trend was upward because shrub cover decreased, Idaho fescue and needlegrass both increased, and the native plant community diversified. Since 2000, a downward trend has become apparent because diversity has declined, canopy and basal cover declined, and both needlegrass and Idaho fescue were extirpated from the 3' by 3' photo plot. Meanwhile, in 2004 some Sandberg's bluegrass plants exhibited crown die-off, low vigor, and looked closely grazed. Sandberg's bluegrass appeared healthier by 2009. Frequency measurements support apparent declines in both shrub and needlegrass cover, but suggest maintenance of both Idaho fescue and squirreltail. Needlegrass and oatgrass declined five to ten percent since 2000, while sagebrush has declined five to 15 percent. Sandberg's bluegrass has declined 10 to 20 percent. Forb frequencies fluctuated dramatically. Phlox has increased somewhere between 15 to 40 percent since 2000, while desert parsley has decreased somewhere between 30 to 55 percent.

Photographs of trend site **10S02W34B**, depict a good condition native plant community in 2012. The overall trend for this site has been static to upward since 1983 because Idaho fescue frequency has increased while sagebrush has decreased. Meanwhile, the site has maintained both diversity and cover of native plants. All components of the expected native plant community are represented. A relatively high number of sagebrush appeared decadent in 2012, typical of an older stand with a high proportion of individuals in senescing. Idaho fescue has been static after increasing from 1983 to 1995. Sagebrush frequency has declined steadily since 1987, supporting observations of an aging stand. Sagebrush frequency has declined 20 to 40 percent since 1987. Sandberg's bluegrass frequency has exhibited minor fluctuations since 1987 but remains a strong community component. Squirreltail has been static after declining ten to 15 percent between 1983 and 2000. Both phlox and desert parsley frequencies have increased since 1987.

Western juniper is encroaching into the view photos. The associated Rangeland Health Evaluation indicates a slight to moderate departure from reference conditions.

The apparent trend at site **10S02W25** has been downward since monitoring began in 1976 because native plant basal and foliar cover has decreased along with diversity. By 2004 the plant community appeared to be in poor condition because both sagebrush and perennial grass cover had declined,

leaving substantially more bare ground than prior years. Heavy grazing occurred periodically (2004), but not in every year (1981). While plant vigor appears to have improved somewhat at this site since 2004, the 2012 photographs depict no shift in species composition. Large head clover populated this site in 1976 but has not been recorded since, despite the proper photograph timing of 2012. Heavy annual grazing was probably more typical at this site before 1981 when this study site was within a private allotment for Asa Black.

Apparent trend at photo trend site **10S02W34A** been upward at this site since monitoring began in 1976 because sagebrush basal and foliar cover declined while Idaho fescue basal cover has increased. The notes accompanying the 1976 and 1981 site visits indicated that interspatial grasses were heavily utilized and in low vigor during both visits. Western juniper is expanding markedly in the view photos, particularly on the escarpments of Wagon Box Basin. This photo site is located near several small wet meadows and a pit-type reservoir, which both encourage livestock use; and was also established to monitor use within the Asa Black cattle allotment.

Two photo sites (**10S02W10** and **10S01W30**) were established in 1976 and 1981 respectively, but were not relocated in 2000, 2004, or 2012. They were also established to monitor use within the Asa Black cattle allotment following its creation in 1976. The Loamy (10S01W30) photo plot site was established on the stream terrace of Camas Creek adjacent to Johnston Cabin. At that site, heavy utilization occurred on available grasses in 1981. The Churning Clay photo site (10S02W10) was nearby.

Permittee Photo Points

Eight permittee photo plots/view photo sites are located in this group, including one in Wagon Box Basin Pasture (4D3). The photos are available in the project record and the results of BLM interpretation are shown in Table 21. Photos were retaken in 2005 for all except the photo sites located in paddocks 4D5 (11S02W25C) and 4F1 (11S02W36).

Table 21. Trend in abundance of perennial grasses and shrubs in JB&S photo plots and view photos, Paddocks 4D1-4D2, 4D4-4D5, and 4F1 and Wagon Box Basin (Pasture 4D3), 1993-2005.

Transect	Ecological Site	Evaluation Period	Grasses		Shrubs/ Trees	
			Plot	Photos	Plot	Photos
11S01W04A	Clayey 12-15	1993-2005	D>^, I><<	D>^, I>	>	><<
11S01W04B	Loamy 13-16	1994-2005	D^, I>	D>^, I>	>	>^
11S02W02	Clayey 12-15	1993-2005	D^, I^	D^, I^	>	>
10S02W34B	Shallow Claypan 12-16	1993-2005	D^, I^	D>^, I^	<<	<<
10S02W34B	Shallow Claypan 12-16	1994-2005	D>, I^	D^, I^	<<	<<
10S01W07	Clayey 12-15	1993-2005	D^, I^	D^, I^	^	>^
10S01W16	Churning Clay 12-15	1993-2005	D^	D^	>	<<
10S02W13B	Clayey 12-15	1993-1994	D>, I>	D>, I>	>	>
9S01W31	Loamy 13-16	1993-1994	D>, I>	D><<, I>	><<	
Key- D= decreaser grasses, collectively, I= increaser grasses, collectively; <<=downward, >=static, ^=upward						

Photo site 11S01W04A (DS D.1-1) is located in a small drainage collection basin about 1/4 mile from Johnson Draw Reservoir. Within and around the photo plot in 2005, some turnover has occurred in individual Idaho fescue plants, and some recruitment has occurred in formerly bare areas. Some pugging

can be seen, reflecting a wet spring in 2005, but little direct damage is evident. In the initial October 1993 photos, the Idaho fescue and Sandberg bluegrass plants were vigorous, with many seedheads, minimal pedestalling, and occupied most of the site. In 1994, some plants in the left center of the photo plot had been heavily grazed although most showed little use, and seed head production was poor. More bare ground was evident, and shrubs were more prominent.

Photo site 11S01W04B (DS D.1-2) is located on a tableland escarpment bordering the same drainage collection basin immediately adjacent to Johnson Draw Reservoir. The photo plot had higher vegetative cover than most low or alkali sagebrush communities, but was selected to include a patch of bare ground and a bitterbrush plant. Within and around the photo plot in 2005, the Idaho fescue plants were larger and more abundant, and most had seedheads. Bare areas were smaller, and pedestalling was still minimal. Within the photo plot, the bitterbrush plant was larger and less hedged, and some turnover had occurred in the mountain big sagebrush plants. More Idaho fescue plants were now being shaded by the expanded bitterbrush plant. In 1994, few seedheads had been present on grasses, and some plucking had occurred on individual Idaho fescue plants.

Photo site 11S02W02 (DS D.2-1) is located on a large ridge top at the junction of the Dickshooter and Wagon Box roads. During spring turnout into the A and B paddocks each year, JB&S cattle are trailed closely along the Dickshooter road through the site of this photo plot. Within and around the photo plot, the same Idaho fescue plants are present, and some additional ones have established. Marked recruitment of Sandberg bluegrass has occurred within the photo plot and in an adjacent cattle trail, reducing the amount and size of bare ground patches. Pugging is evident from trailing activities during the wet spring of 2005. The initial May 1993 photos have a prominent forb component. Since it was a wetter year, shrubs were more abundant and produced more leaf material within the photo plot than in 1994. In 1994, few grasses produced seedheads, and bare soil was more prominent in the photo plot, largely because forbs were not visible and shrub mortality.

Photo site 10S01W07 (DS D.4-1) is located on a stream terrace adjacent to Camas Creek, a salt lick, and a two-track road just outside the JB&S Camas Creek (Dry) Field base property fence. Within and around the photo plot in 2005, many new grasses, mostly Idaho fescue, have become established. The new plants are smaller in size, but have no pedestalling. More shrubs have also become established. The recruitment of new grasses and shrubs has markedly reduced the amount of bare ground, and the increased surface roughness would retard overland water flow. In the initial 1994 photos, perennial grasses were sparse and pedestalled, with some past crown death, much of the soil surface was crusted, and several shrubs were visible within the photo plot. The grasses were still markedly pedestalled in 1995 and the same grass and shrub plants were present.

Photo site 10S01W16 (DS D.4-2) is located in a drainage collection basin just inside the fence dividing this paddock from the DCC Use Area, Pasture 8N. It is also about ¼ mile from West Rim Reservoir and is adjacent to the 2-track road leading over the top of Big Springs Butte. Small areas of silver sagebrush communities such as these occur in a repetitive pattern in drainages and just below tableland escarpments throughout upper portions of the Big Springs Allotment. Both in and around the photo plot in 2005, substantially greater numbers of bluegrass plants are present, and seedheads were abundant. None are pedestalled. Shrubs are larger, but fewer. The recruitment of new grasses has markedly reduced the amount of bare ground, and the surface roughness has also increased. In the initial photos, perennial grasses were markedly pedestalled. Much of the soil surface was bare and cracked; but soil crusting and cracking in late summer is natural on churning clay soils. In 1994, the bluegrass plants within the photo plot were larger, with more abundant seedheads; but the soil cracks were larger, suggesting a greater degree of drying in a lower precipitation year.

Photo site 10S02W13B (DS D.5-1), an alkali sagebrush site, is located in a drainage collection basin on Yellow House Flat. On this Flat, silver sagebrush and alkali sagebrush communities are closely intermingled. It is less than ¼ mile from Yellow House Reservoir #2 along the 2-track road leading to the reservoir. Bare ground is more prominent and shrubs less prominent in the 1994 photos, reflecting differences in precipitation. Idaho fescue vigor is good in both.

Photo site 9S01W31 (CC F.1-1) is located in a swale bottom just outside the gate of the JB&S Desert Field base property. Bare ground is more prominent and shrubs markedly less prominent in the 1994 photos. Idaho fescue vigor is good in both, but the photos suggest crown die off in some individuals in 1994. Neither year shows evidence of significant current utilization.

Photo site 10S02W34B (DS D.3-1) is located on a low ridge within Wagon Box Basin, and is co-located with a BLM photo plot and NPFT. The JB&S photo plot shares a corner stake with the BLM photo plot. In 1994, the plot photo was taken on the opposite side of the axis of BLM's NPFT. Only small portions of the original 1993 photo plot are visible. Both JB&S photo plots were retaken in 2005. The photo plot used in 1993 had fewer shrubs and more Sandberg bluegrass and Idaho fescue. There was less bare ground, more Sandberg bluegrass, and slightly more Idaho fescue than in 1993 in the view photos. The 1994 photo plot had fewer shrubs and more Sandberg bluegrass and Idaho fescue. Differences in species prominence, grass seed heads and soil surface characteristics in 1993 and 1994 were similar to other JB&S photo plots.

Standard 7: Water Quality

Beneficial Use Support and TMDLs

The Idaho Department of Environmental Quality (IDEQ) evaluated the beneficial use support status of five assessment units (groups of streams) within or bordering the JB&S Use Area (Table 22). All five assessment units are not supporting the cold water aquatic life use (CWAL). In addition to the beneficial uses listed, all waters are assumed to support agriculture, industrial water supply, wildlife habitats and aesthetics. However, none of the waters within the Big Springs Allotment have been assessed for these other uses.

Table 22. Designated and existing beneficial use support status (IDEQ 2003, 2004a).

Stream Assessment Unit	CWAL	SS	PCR	SCR
Camas Creek-1 st and 2 nd order (ID17050104SW029_02)	---	---	---	---
Camas Creek-3 rd order (ID17050104SW029_03)	Not Supporting(1)	---	---	---
Pole Creek-1 st and 2 nd order (ID17050104SW028_02)	Not Supporting(1)	Not Supporting(2)	---	---
Pole Creek-3 rd order (ID17050104SW028_03)	Not Supporting(1)	Not Supporting(2)	---	---
Deep Creek-4 th order (ID17050104SW026_04)	Not Supporting(1)	Not Supporting(2)	---	---

Stream Assessment Unit	CWAL	SS	PCR	SCR
Deep Creek-5 th order (ID17050104SW026_05)	Not Supporting(1)	Not Supporting(2)	---	Fully(1)
Dickshooter Creek-2 nd to 5 th order (ID17050104SW027_2 through 5)	---	---	---	---
CWAL=Cold Water Aquatic Life; SS=Salmonid Spawning; PCR=Primary Contact Recreation; SCR=Secondary Contact Recreation (1) = IDEQ 2004b (2) = IDEQ 2003 --- = Not Assessed				

IDEQ conducted a Subbasin Assessment and Total Maximum Daily Load (TMDL) analyses for five 303(d) listed stream segments in the Upper Owyhee River watershed that are located in or bordering the JB&S Use Area (IDEQ 2003). IDEQ developed TMDL actions for four of these streams (Table 23).

Table 23. Total Maximum Daily Load (TMDL) Actions (IDEQ 2010).

Name (Assessment Unit)	TMDL Action
Camas Creek-3 rd order (ID17050104SW029_03)	No TMDL; Add to 303(d) list for temperature
Pole Creek-1 st and 2 nd order (ID17050104SW028_02)	De-list sediment; Develop TMDL for temperature
Pole Creek-3 rd order (ID17050104SW028_03)	De-list sediment; Develop TMDL for temperature
Deep Creek-4 th order (ID17050104SW026_04)	Develop TMDL for sediment and temperature; List for dissolved oxygen
Deep Creek-5 th order (ID17050104SW026_05)	Develop TMDL for sediment and temperature; List for dissolved oxygen
ID17050104SW031_02 Nickel Creek & tributaries	Sediment/siltation

Water Temperature

The Upper Owyhee River Subbasin Assessment (2002) and TMDL process addressed only those streams that were identified on 303(d) listings. The beneficial use support status in Table 24 is based on IDEQ's analysis of water temperature data from various sources. BLM monitored the water temperature of four stream segments in the JB&S Use Area of the Big Springs Allotment (Maximum Temperature and Maximum Average Temperature, Table 24). Water temperature data were evaluated following IDEQ's 10% exceedance policy and the temperature exemption (See definitions in Glossary, IDEQ 2002 and ID APA 58.01.02).

Table 24. Stream temperature monitoring of streams in the JB&S Use Area of Big Springs Allotment (Pole and Camas creeks).

Stream	Dates Sampled	Max T (°C)	Max Avg T (°C)	CWAL	SS
Camas Creek (Mile 0.2 ; Elev 5229')	7/03-9/29/98	26	23.1	NS	---
	7/14-10/05/99	22.2	20.8	NS	---
(Mile 0.4 ; Elev 5254')	7/13-9/20/00	21.7	20.9	FS	---
Pole Creek (Mile 9.5; Elev 5158')	7/13-9/24/00	26.5	24	NS	---
	7/28-10/25/99	24.1	22.2	NS	---
(Mile 11.3; Elev 5184')					
CWAL=Cold Water Aquatic Life (water temp. = 22°C or less, with a maximum daily average of < 19°C); SS=Salmonid Spawning (water temp. = 13°C or less, with a maximum daily average of < 9°C) FS=Fully Supports beneficial use; NS=Does Not Fully Support beneficial use ---= No Data					

The amount of stream channel shading provided by topography (i.e., canyon walls) and vegetation is important in regulating the amount of direct solar radiation that reaches the water surface. While topography generally remains constant, activities that occur in and near the riparian areas may affect the amount and type of vegetation. The potential or capability for a stream system to support riparian shrubs and trees depends on the stream type (gradient, stream bed and bank materials, valley bottom width, flow regime, etc) and landscape setting. The Upper Owyhee Subbasin Assessment and TMDL (IDEQ 2003) provided target shade requirements for streams in the JB&S use area for which adequate data were available to model (Table 25). These targets represent the amount of shade needed to comply with water temperature standards and may be refined, based on additional data or site potential.

The Upper Owyhee Subbasin Assessment (2003) identified Deep Creek as not meeting water quality standards, and a temperature TMDL (shade target) was developed for Deep Creek and its tributary streams. However, in the IDEQ 2012 Integrated report, Deep Creek was determined to not have an excess heat load; however, Camas, Camel, and Pole creeks have not met shade targets, and remain on the 303(d) list for excess water temperature.

Table 25. Upper Owyhee TMDL target shade requirements for select streams in the JB&S Use Area, Big Springs Allotment.

Stream	June % Shade (SS Criteria)	July % Shade (CWAL Criteria)	August % Shade (CWAL Criteria)
Lower Deep Creek (4 miles downstream of Castle Creek)	100	66	67
Upper Pole Creek	96	96	58
Camas Creek	98	98	61
Upper Dickshooter Creek	100	100	62
Lower Dickshooter Creek	94	65	67
SS=Salmonid Spawning; CWAL=Cold Water Aquatic Life			

Shade measurements were taken at one site on streams in the JB&S Use Area (Table 26). The IDEQ shade data were collected with a spherical densiometer. The densiometer readings represent a point-in-time measurement.

Table 26. Stream shade monitoring on streams in the JB&S Use Area, Big Springs Allotment.

Stream	Date	Shade (%)	Stream Type	Agency
Camas Creek (1999SBOIA014) (Mile 5.0; Elev 5718')	7/27/99	00	C	IDEQ
Stream Type = Rosgen Stream Classification Level I (Rosgen 1996)				

Fecal Coliform

The current maximum standard for primary contact recreation beneficial use designation is 406 *Escherichia coli* organisms/100 ml for a single sample and 576 *E. coli* organisms/100 ml for a single sample for secondary recreational contact (IDAPA 58.01.02). Table 27 summarizes BLM monitoring for coliform bacteria.

Table 27. Coliform bacteria analyses (colonies per 100 ml) from streams in the JB&S Use Area, Big Springs Allotment.

Stream	Date	Total Coliform	Fecal Coliform
Deep Creek (DEEP_00.0) (Mile 0.0; Elev 4470')	7/07/77	90	78

Historical analyses reported only fecal coliform and total coliform counts, rather than *E. coli*. *E. coli* are one type of fecal coliform bacteria and the data presented in Table 27 include *E. coli*, but the laboratory analyses at the time did not differentiate organisms because the water quality standard was for fecal coliform only (for primary contact recreation the standard was 500 colonies/100 ml and for secondary contact recreation the water quality standard was 800 fecal coliform colonies/100 ml).

Sediment

Water quality criteria for sediment are determined on a case-by-case basis (IDAPA 58.01.02.250.05). In the absence of specific criteria, sediment shall not exceed quantities that impair designated uses. Streambed sediment was not assessed for JB&S Use Area stream segments. The Upper Owyhee Subbasin Assessment and TMDL (IDEQ 2003) provided a 27% target for streambed fine sediment (sand/silt/clay) allocation for Deep Creek. This target represents the maximum amount of fine sediment that would accumulate on the stream bottom and still provide for full support of beneficial uses. This target may be refined, based on additional data or site potential.

Water Chemistry

Table 62 summarizes BLM and IDEQ water chemistry monitoring only for stream segments where beneficial use support has not been assessed.

Table 28. Water chemistry monitoring in the JB&S Use Area, Big Springs Allotment.

Stream	Date	pH	Conductivity (uS/cm)	Dissolved Oxygen (mg/L)	Instantaneous Temperature (°C)
Deep Creek (DEEP_00.0) (Mile 0.0; Elev 4470')	8/16/76	8.1	32	8.3	12
	10/20/76 11:25	7.6	26	11.7	---
	10/20/76 12:15	8.0	86	9.7	3.8
	4/07/77	7.7	18	10	8
	7/07/77	8	---	7.4	15
Deep Creek (DEEP_014.2) (Mile 11.7; Elev 4686')	8/12/91	---	---	5	24
Water Quality Standard		6.5 – 9.0	---	>6	≤ 22
--- = No data or not measured.					

The limited water chemistry data in Table 28 indicate that Deep Creek may be experiencing low levels of dissolved oxygen during periods of low flow when water temperatures are elevated.

Other Data Reviewed

BLM reviewed the State of Idaho's Beneficial Use Reconnaissance Protocol database (IDEQ 2004b). IDEQ uses these data, along with other information, to determine beneficial use support status. Beneficial Use Reconnaissance Protocol (BURP) data have not been analyzed in further detail in this Assessment.

Standard 8: Threatened and Endangered Plants and Animals

Wildlife

With the exception of Wagon Box Basin (Pasture 4WBB), most of this use area is comprised of low sagebrush/bunchgrass communities with scattered linear-shaped stands of big sagebrush/bunchgrass communities at the base of low mesas. Wagon Box Basin is characterized with an intermittent juniper component, which is densest in the northern portion of the basin. Overall conditions in the uplands of this use area are good with most trend sites exhibiting static to upward trends (see Standard 4).

Streams in this use area are in generally good condition, whereas springs in this use area are distributed among Nonfunctioning (NF) through Proper Functioning Condition (PFC) (see Standard 2). Roughly 85% of the streams and 20% of the 16 springs located on public land in this use area were rated as PFC. With the exception of 2.7 miles of stream and six springs rated as Nonfunctioning (NF), the remaining streams and springs assessed since 2004 were rated as Functioning at Risk (FAR) or did not get assessed. Streams that showed room for improvement included portions of the Owyhee River and Camas and Pole Creeks.

Sage-grouse

Even though much of the Black Use Area is comprised of uplands dominated with low sagebrush, sage-grouse use the area for lekking, nesting, late brood-rearing, and wintering activities. There are five occupied sage-grouse leks in this use area and eight within three miles of its boundary (IDFG 2013).

Telemetry data collected by IDFG and BLM shows year round use by grouse in the Black Use Area with a high concentration of late summer and fall use, especially in the northern portion of the area. Overall, this use area is an important resource for sage-grouse in the Bruneau Field Office. Figure 17 depicts conditions measured at various locations for sage-grouse across the use area.

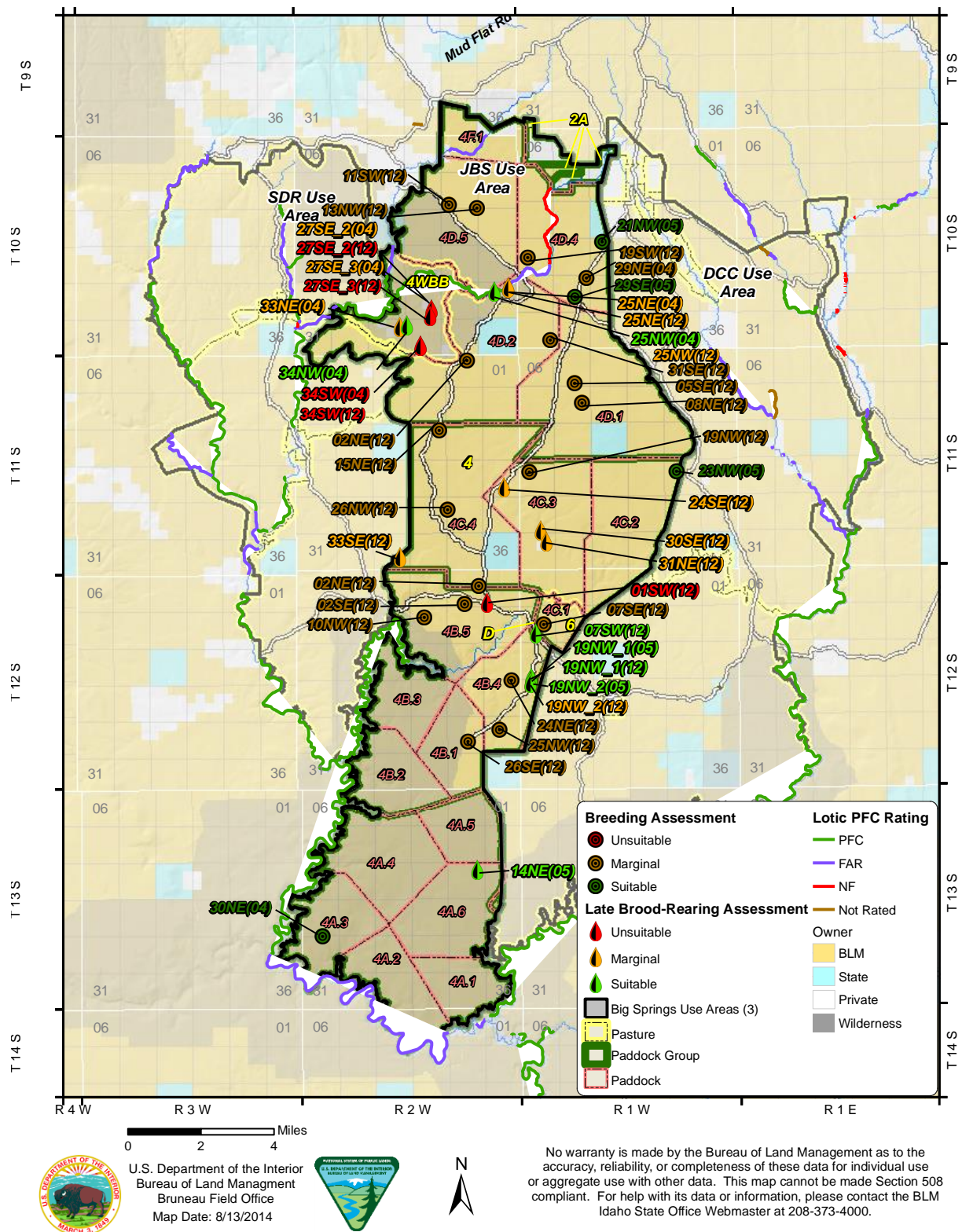


Figure 17. Sage-grouse data for the JBS Use Area

Pasture 4, A Paddocks (Early-Mid Spring Use)

The A paddocks are located in the southernmost portion of the Black Use Area. This area is entirely within the Owyhee River Wilderness. These paddocks showed the most departure from reference condition compared to the other paddock groups but were still functioning properly biotically and dominated by decreaser grasses (Standard 4). The majority of this area is comprised of low sagebrush (Figure 18). Telemetry data shows winter use by sage-grouse and two occupied leks reside in these paddocks so sage-grouse likely nest here as well.



Figure 18. Low sagebrush habitat in Paddock 4A.3, 2004

The one spring in this paddock group was assessed for suitability for sage-grouse late brood-rearing use. This spring rated FAR for PFC due to the presence of headcuts and cattle impacts and rated on the low side of suitable for sage-grouse in 2005 (Table 29). Other riparian areas in this paddock group include Deep Creek and the Owyhee River. Even though these areas are rated FAR and PFC (see Figure 17), these areas are located in deep canyons so would not be used by sage-grouse.

The upland vegetation condition for the A paddocks is in good condition with a dominance of decreaser grasses in the understory. One nesting assessment was conducted in a stand of big sagebrush during 2004 in Paddock 4A.3 and was rated suitable for sage-grouse with high bluebunch wheatgrass cover and forb diversity and abundance.

Pasture 4, B Paddocks (Mid Spring Use)

The B paddocks are located north of the A paddocks, with the southwest portion of these paddocks overlapping the Owyhee River Wilderness (see Figure 17). As with the majority of the Black Use Area, these paddocks are dominated by low sagebrush (Figure 19). These paddocks showed the second most departure from reference condition compared to the other paddock groups but were still functioning properly biotically and dominated by decreaser grasses (Standard 4). Telemetry data shows some

winter, spring/summer, and late summer use by sage-grouse and two occupied leks exist in these paddocks.



Figure 19. Low sagebrush habitat in Paddock 4B.5, 2004.

Areas assessed for use by sage-grouse for late brood-rearing activities in this paddock group included four springs, two of which were associated with downstream reservoirs. Two rated suitable while one rated suitable in 2005 and marginal in 2012 and the last one rated unsuitable. The springs that rated marginal and unsuitable were both associated with downstream reservoirs. Other riparian areas in this paddock group include Deep Creek and Dickshooter Creek. Even though these streams are rated PFC, most of these streams associated with this paddock group reside in deep canyons and would not be used by sage-grouse (see Figure 17). However, the upper portions of Dickshooter Creek in the northeast portion of Paddock 4B.5 are relatively flat but this portion of the creek is ephemeral and most of it does not contain hydric vegetation.

The upland vegetation condition for the B paddocks is in good condition and is comprised primarily of low sagebrush. Six nesting assessment were conducted in this paddock group, all in stands of low sagebrush chosen as a representatives of the local landscape. All of these sites were in good condition with high forb abundance and diversity but all but one rated marginal because of the shorter stature of low sagebrush relative to big sagebrush-specific nesting habitat parameters identified for rating suitability (USDI BLM 2010).

Pasture 4, C Paddocks (Late Spring Use)

The C paddocks are located north of the B paddocks in the center portion of the Black Use Area (see Figure 17). These paddocks are also dominated by low sagebrush (Figure 20). These paddocks show very little departure from reference (Standard 4). Telemetry data show some late summer and fall use by

sage-grouse and no known occupied leks in these paddocks. However, it is likely that sage-grouse nest here as well.



Figure 20. Low sagebrush habitat in Paddock 4C.4, 2004.

Areas assessed for use by sage-grouse for late brood-rearing activities included four springs, all of which rated marginal. Three of the four showed signs of heavy livestock use but were partially protected by rock armoring at the sites and the fourth rated marginal due to a lack of forb abundance and diversity. No perennial stream riparian areas occur in this paddock group.

As with the other paddock groups thus far, upland vegetation condition is in good condition and is comprised primarily of low sagebrush. Five nesting assessments were conducted in this paddock group, four in stands of low sagebrush chosen as representatives of the majority of the landscape and one in a strip of big sagebrush under a rim of Big Spring Butte. All of these sites were in good condition with high forb abundance and diversity but all of the low sagebrush sites rated marginal because of the shorter stature of low sagebrush relative to big sagebrush-specific nesting habitat parameters identified for rating suitability (USDI BLM 2010).

Pasture 4, D and F Paddocks and Wagon Box Basin (Early Summer Use)

The D and F paddocks, along with Wagon Box Basin are located in the northernmost portion of the Black Use Area, with the west central portion of these paddocks overlapping the Pole Creek Wilderness (see Figure 17). These paddocks are dominated by low sagebrush but also have the most juniper of any of the other paddock groups, especially in Wagon Box Basin (Figure 21). These paddocks show very little departure from reference, with Wagon Box Basin deviating the most with a slight to moderate departure (Standard 4). Telemetry data show a high amount of late summer use concentrated in the northeast portion of the paddock group around Camas Creek. Other use by sage-grouse occurs during the spring/summer and fall with one occupied lek in these paddocks.



Figure 21. Juniper/sagebrush habitat in Wagon Box Basin, 2004.

Seven areas were assessed for use by sage-grouse for late brood-rearing activities, with five of them surveyed during 2004 and 2012. Three of these repeated sites showed a drop in rating from 2004 to 2012. With the exception of a wet meadow area, the latest assessments on the remaining sites rated marginal or unsuitable, with the majority of the ratings attributed to livestock impacts (Table 29). With the exception of Camas Creek northeast of the Pole Creek Wilderness, streams in this group of paddocks are in good shape (see Standard 2).

The upland vegetation condition for the D and F paddocks is in good condition and is comprised mostly of low sagebrush with some silver sagebrush and stringers of big sagebrush. Ten nesting assessment were conducted in this paddock group, most of which were in low sagebrush with a few in big and silver sagebrush (Table 29). All of these sites were in good condition with high forb abundance and diversity with the big sagebrush sites rating suitable and the low and silver sagebrush sites rating marginal. As mentioned earlier, using big sagebrush-specific nesting habitat parameters for suitability (USDI BLM 2010) usually leads to marginal ratings for good low and silver sagebrush sites.

Table 29. Sage-Grouse Habitat Assessments for Joseph Black and Sons Use Area in Big Springs Allotment, 2004, 2005 and/or 2012.

Pasture/Paddock Group	Site Name	04/05 Rating	2012 Rating	Vegetation	Season	Rationale for Ratings and Comments
4D	10S2W27SE_2	M	U	Wet meadow at spring	LBR	Forb abundance poor, erosion at springhead with evidence of moderate to heavy grazing impacts, lots of hummocking

4D	10S2W27SE_3	M	U	Wet meadow at spring	LBR	Forb abundance poor, erosion at springhead with evidence of moderate to heavy grazing impacts, lots of hummocking
4D	10S2W33NE	M	---	Wet meadow at spring	LBR	Forbs scarce, minor erosion, heavily grazed
4D	10S2W34NW	S	---	Wet meadow	LBR	Forbs spotty, no erosion, sage-grouse present
4D	10S2W34SW	U	U	Wet meadow at spring	LBR	Use level high, mostly sedges and rushes with few preferred forbs, may be losing area
4D	10S2W25NE	M	M	Stream drainage	LBR	Camas Creek: forbs sparse, use moderate ('12') to high '04) with some erosion and bare areas but eroded banks seem to be healing ('04), sage-grouse sign present
4D	10S2W25NW	S	M	Stream drainage	LBR	Camas Creek (intermittent portion): Good forbs in '04 but sparse in '12 (dry year), no erosion, good grass and rush cover overall
4D	11S2W2NE	---	M	Low sagebrush	Breeding	Rocky site, good condition site with high forb diversity and grass cover but shrub height is marginal and forb cover is low
4D	11S1W8NE	---	M	Low sagebrush	Breeding	Rocky site, good condition site with high forb diversity and forb and grass cover but shrub height and cover at this site are marginal
4D	11S1W5SE	---	M	Low sagebrush	Breeding	Very rocky site, good condition site with high forb diversity and forb and grass cover but shrub height and cover at this site are marginal
4D	10S2W13NW	---	M	Low and silver sagebrush	Breeding	Good condition site with high forb diversity and abundance but shrub, grass, and forb height is low
4D	10S2W11SW	S**	M	Silver sagebrush	Breeding	Good condition site with abundant forbs but shrub, grass, and forb heights are marginal

4D	10S1W31SE	---	M	Low sagebrush	Breeding	Rocky site, good condition site with high forb diversity and forb and grass cover but shrub height and cover at this site are marginal, sage-grouse sign present
4D	10S1W29SE	S	---	Mtn big sagebrush	Breeding	Excellent cover in this strip of big sagebrush, preferred forbs abundant in adjacent low sage
4D	10S1W29NE	M	---	Low sagebrush	Breeding	Good condition site with high forb diversity and forb and grass cover but shrub height and cover at this site are low
4D	10S1W21NW	S	---	Mtn big sagebrush	Breeding	Excellent cover in this strip of big sagebrush, preferred forbs abundant in adjacent low sage, sage-grouse present
4D	10S1W19SW	---	M	Low sagebrush	Breeding	Good condition site with high forb diversity and forb and grass cover but shrub height and cover at this site are marginal
4C	11S2W33SE	---	M	Wet meadow at spring	LBR	Excellent condition spring but lacking forb diversity and density, sage-grouse sign present
4C	11S1W31NE	---	M	Wet meadow at spring	LBR	Heavy grazing use, water channel from associated springs is rock armored and mostly protected but surrounding vegetation grazed short and not meeting wetland potential extent, poor forb abundance
4C	11S1W30SE	---	M	Wet meadow at spring	LBR	Heavy grazing use, site is rock armored and mostly protected but surrounding vegetation grazed short, poor forb abundance
4C	11S2W24SE	---	M	Wet meadow at spring	LBR	Heavy grazing use, site is rock armored and mostly protected but surrounding vegetation grazed short , poor forb abundance

4C	12S1W7SE	---	M	Low sagebrush	Breeding	Good condition site with high forb diversity and forb and grass cover but shrub height and cover at this site are low, cracked sage-grouse eggs at site
4C	11S2W26NW	---	M	Low sagebrush	Breeding	Good condition site with high forb diversity and abundance but shrub, grass, and forb heights are marginal
4C	11S2W19NW	---	M	Low sagebrush	Breeding	Good condition site with high forb diversity and abundance but shrub, grass, and forb heights are marginal
4C	11S2W15NE	---	M	Low sagebrush	Breeding	Rocky site, good condition site with high forb diversity and grass cover but shrub height and cover at this site are marginal
4C	11S1W23NW	S***	---	Mtn big sagebrush	Breeding	Excellent grasses and forbs, sage-grouse seen nearby
4B	12S1W19NW_1	S	S	Wet Meadow at spring	LBR	No erosion, forb density good but diversity low, sage-grouse sign present.
4B	12S1W19NW_2	S	M	Wet meadow at spring	LBR	Minor erosion with moderate to heavy cattle use ('12), forbs common, reservoir downhill of spring at site
4B	12S1W7SW	---	S	Wet meadow at spring	LBR	Dickshooter Camp: site in good condition with good forb diversity and abundance and thick willows along channel and spring boundary
4B	12S2W1SW	---	U	Wet meadow at spring	LBR	Major erosion with heavy cattle use, no preferred forbs found at site, reservoir downhill of spring at site
4B	12S2W26SE	---	M	Low sagebrush	Breeding	High forb diversity and grass cover but shrub height (slightly too high) and cover at this site are marginal
4B	12S2W25NW	---	M	Low sagebrush	Breeding	High forb diversity but shrub height and cover at this site are marginal

4B	12S2W24NE	---	M	Low sagebrush	Breeding	Good forb diversity and abundance but shrub, grass, and forb height marginal
4B	12S2W10NW	---	M	Low sagebrush	Breeding	Good condition site with high forb diversity and cover but shrub cover and heights are marginal
4B	12S2W2SE	---	M	Low sagebrush	Breeding	Good condition site with high forb diversity and cover but shrub cover and heights are marginal
4B	12S2W2NE	---	M	Low sagebrush	Breeding	Good condition site with high forb diversity and abundance but shrub, grass, and forb heights are low
4A	13S2W14NE	S	---	Wet meadow at spring	LBR	Some erosion, forbs weak from heavy grazing.
4A	13S2W30NE	S	---	Big sagebrush	Breeding	Sagebrush cover slightly high but bluebunch wheatgrass cover excellent and forb diversity and abundance are fair
S=Suitable, M=Marginal, U=Unsuitable **Only forbs assessed at site ***Qualitative assessment						

Columbia Spotted Frog

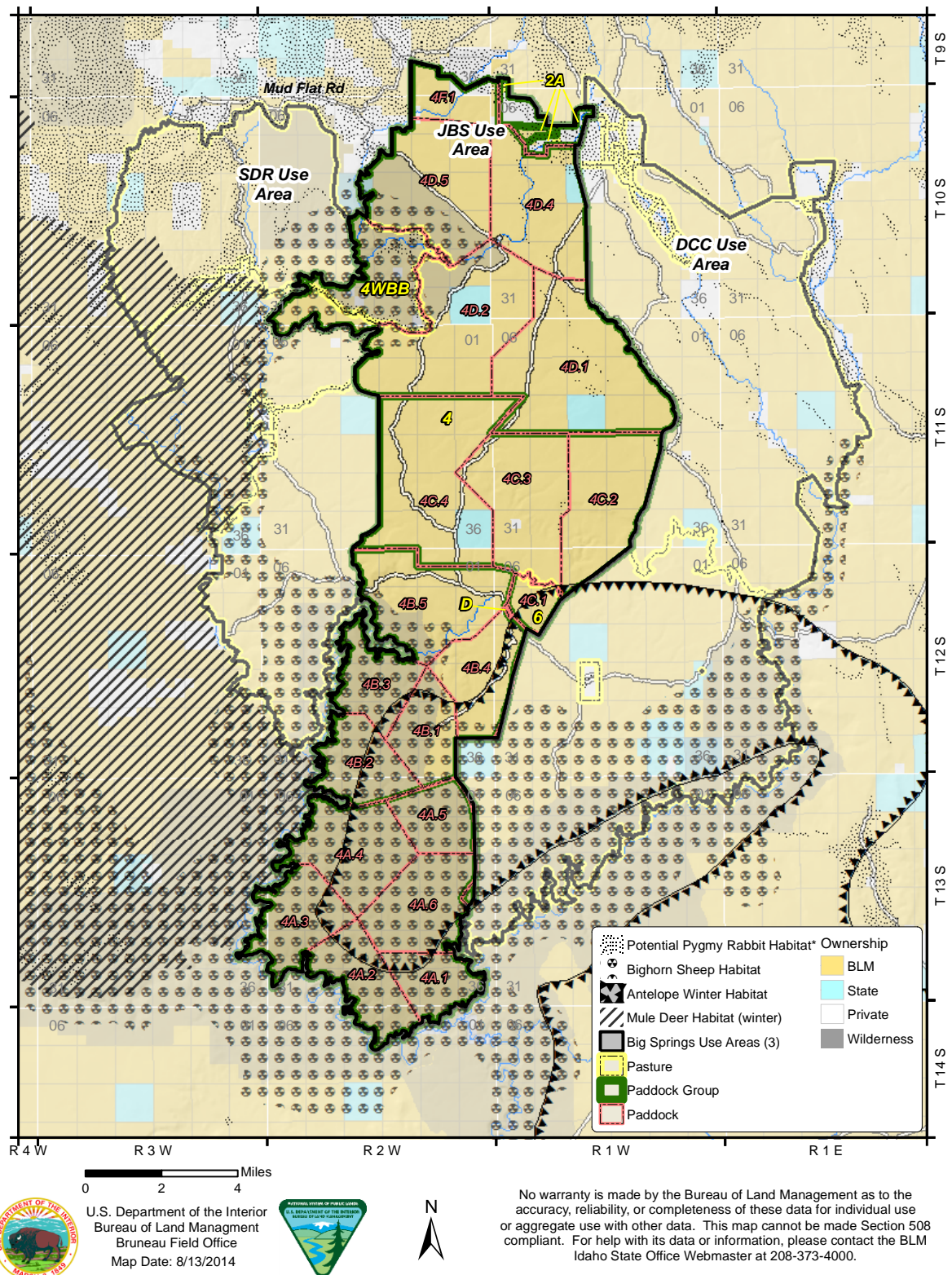
Spotted Frogs have been recorded in the D and F Paddocks in the northern portion of the Black Use Area, on Pole Creek and its tributaries (including Camas Creek) (IFWIS 2013). Pole Creek and Camas Creek where frogs occur is rated PFC or FAR. The side tributary that goes past the Mud Flat Guard Station (northwest corner of Paddock 4F.1) is not rated but appeared to be in good shape from field visits, with tall bank graminoids and pools with submerged vegetation (Figure 22). Other streams or spring areas in the use area may contain spotted frogs but many were visited for this assessment and no others were noted. Since PFC ratings are roughly associated with habitat condition, many of the streams rated as PFC in the D and F Paddocks provide suitable conditions for spotted frogs if other habitat requirements are present. Streams exhibiting FAR or below characteristics (i.e. sections of Pole and Camas Creeks) either prevent use by spotted frogs or could provide better habitat for this species.



Figure 22. Tributary of Pole Creek by Mud Flat Guard Station, northwest corner of Paddock 4F.1, Aug 30, 2005.

Pygmy Rabbit

Pygmy rabbits have been documented in the northern half of the use area, primarily in the D and F Paddocks but also in the northeast corner of the C Paddocks. Analyses of pygmy rabbit detections relative to Ecological Site Description (ESD; NRCS 2012, unpublished draft) showed a logical association of locations with four ESD types. These ESD types represent roughly 3,200 acres (<5% of use area) in the Black Use Area and were used as a model for potential pygmy rabbit habitat in this assessment (Fig 23). The ESD types correlate roughly with the stringers of big sagebrush, where the soil is deeper compared to the majority of the low sagebrush habitat found in the use area. Pygmy rabbits need deep, loamy soils for burrowing. Accordingly, surveys of some of the stringers of big sagebrush in this use area resulted in detections of pygmy rabbit occupancy. The southern portion of the use area is rockier than the northern portion and likely lacks any suitable habitat. Since upland vegetation conditions are good in much of the use area, conditions for pygmy rabbits in the limited areas they can inhabit are generally suitable in this use area.



Bighorn Sheep

Bighorn sheep habitat overlaps with the southern half of the use area in the A and B Paddocks north of the Owyhee River and Battle Creek and east of Deep and Dickshooter Creeks, as well as in the D Paddocks in the vicinity of Wagon Box Basin (Fig. 23). Although the overlap is roughly 35,000 acres, bighorn sheep concentrate near the canyon areas of the Owyhee River and Battle, Deep, and Dickshooter Creeks so use is not evenly distributed within the delineated habitat. Habitat quality and quantity in the BFO does not appear to be the limiting factor for bighorn sheep since they graze on steeper slopes than cattle, so only localized competition with cattle for forage is possible where cattle can access canyon areas (IDFG 2011). The Owyhee River Population Management Unit, in which the Black Use Area resides, has exhibited stable bighorn sheep numbers between 250-350 animals since 2006. Upland conditions are good in the A, B, and D Paddocks where bighorn reside in this use area and much of the area is in the Owyhee River and Pole Creek Wilderness areas so human disturbance is very low.

Fish

Redband trout inhabit Deep Creek in the JB&S Use Area, which borders paddocks 4A3, 4A4, and part of paddock 4B2. They likely use this portion of Deep Creek seasonally. Trout densities in Deep Creek are low, with redband trout present at a minimum density of 0.3 trout per 100 m² of stream in May 2004, immediately upstream of the Deep Creek confluence. The 11.6 miles of Deep Creek in the JB&S Use Area has PFV stream channels, floodplains, and riparian areas, but the stream is not providing suitable habitat for the maintenance of viable trout populations because of elevated stream temperatures. Stream temperatures are likely elevated due to poor watershed conditions upstream of the JB&S Use Area.

Plants

There are three special status plants (SSP) known to occur in the JB&S Use Area (Table 30). Owyhee River forget-me-not (*Hackelia ophiobia*) is a Type 3 plant and thin leaf goldenhead (*Pyrrocoma linearis*) and Bach's downingia (*Downingia bacigalupii*) are both Type 4 plants. Simpson's hedgehog cactus (*Pediocactus simpsonii*) also occurs in the JB&S Use Area.

Table 30. SSP Known to Occur in the JB&S Use Area.

Species	Habitat	Status	Number of Populations in Use Area
Bacigalupi's downingia	Drying mud of vernal pools, muddy lake margins, wet meadows, roadsides, irrigation ditches, and streambanks.	BLM Sensitive, Type 4	7
Owyhee River forget-me-not	Talus at the base of rhyolitic cliffs and rock crevices on shady north face of canyons.	BLM Sensitive, Type 3	1
Thinleaf goldenhead	Grassy springs or streambanks; wet or dry, often alkaline meadows.	BLM Sensitive, Type 3	1
Simpson's hedgehog cactus	On benches and canyon rims in rocky/stony or sandy soil in low sagebrush habitat.	BLM Sensitive, Type 4	1

The SSP known to occur in the JB&S Use Area and their condition are discussed below by group of paddocks.

Pasture 4, A Paddocks (Early – Mid Spring Use)

One population of the Owyhee River forget-me-not is located in the “A Paddocks” (Table 31). This species has a very restricted habitat that includes well-shaded talus, in cracks and crevices of rocky basaltic bluffs and cliffs, and steep banks of canyons. The remoteness and precipitous nature of its location in the Owyhee River has precluded regular monitoring of this population. This remoteness also provides protection from anthropogenic impacts, and therefore it has a low probability of disturbance from livestock.

One population of Simpson’s hedgehog cactus is also located in the “A Paddocks”. Hedgehog cactus is of lower conservation concern due in part to a higher resilience to disturbance and its widespread distribution. Although this species remains above ground all year, the rocky habitat in which hedgehog cactus typically grows and the plants’ protective spines help protect this species from trampling and herbivory. During a site visit conducted in 1992, the site quality was rated as good, with approximately 200 plants present. In addition, the area where this population is located is very rocky.

Table 31. Known Impacts to SSP Populations in Paddocks 4A1-4A6 of the JB&S Use Area, Big Springs Allotment.

Paddocks	Species	Best available information regarding impacts
A	Owyhee River forget-me-not	1980’s-no data, habitat relatively inaccessible.
A	Simpson’s hedgehog cactus	1992-approximately 200 plants, site quality assessed as good, area is very rocky and poorly watered so impacts are not likely.

Pasture 4, B Paddocks (Mid Spring Use)

Two populations of Bach’s downingia are located in these paddocks (Table 32). This annual species is typically found in drying mud of vernal pools, lakes, wet meadows, and streambanks, but it has also been found in man-made structures such as reservoirs, roadsides and irrigation ditches. Growth begins in late May and most individuals in a population will disperse seed and become dormant by the end of August.

Table 32. Known Impacts to SSP Populations in Paddocks 4B1-4B5 of the JB&S Use Area, Big Springs Allotment.

Paddocks	Species	Best available information regarding impacts
B	#1, Bach’s downingia	1971-first observed, no data collected. 1992-approximately 200 plants observed with population vigor assessed as fair. 2004-approximately 200 plants with population condition assessed as good and vigor assessed as excellent. 2009 – Population extended to include new areas along Dickshooter Creek. Approximately 10,000 plants in good condition habitat with excellent vigor.
B	#2, Bach’s downingia	1992-approximately 30 to 50 plants with vigor assessed as poor to good, noted threats included grazing and trampling.

Paddocks	Species	Best available information regarding impacts
		2005-approximately 300 plants with vigor assessed as excellent. 2009 – less than 100 plants with poor vigor and heavy trampling in habitat.
B	Owyhee River forget-me-not	1982-no data, habitat relatively inaccessible.

1 -Idaho Conservation Data Center tracking number, Element of Occurrence (EO).

Population #1 of Bach's downingia was visited in 1992, 2004 and 2009. During all monitoring dates, this population was assessed as being in good condition with excellent population vigor. Population #1 occupies wetlands that occur along Dickshooter Creek that are mostly accessible to livestock (Figure 24). Portions that had the best accessibility to livestock had smaller individuals (low vigor) and were more sparsely populated. During an October visit to Dickshooter Creek in 2010, habitat for Bach's downingia was markedly different than in 2009. In 2009 the canyon appeared not to have had much grazing pressure or accessibility but in 2010 riparian vegetation was heavily used and banks showed increased trampling. Given that this population was in the best condition of any observed to date in the field office, the condition rating may decline if late season grazing pressure were to continue.



Figure 24. Population #1 along Dickshooter Creek, 2009.

Population #2 of Bach's downingia is located along Dickshooter Reservoir and was visited in 1992, 2005 and 2009. The population vigor and site quality have fluctuated since 1992. Population size has varied from less than 50 to 300 with less than 100 individuals when last visited in 2009. During all years, mechanical disturbance was described as heavy. In 2009 the amount of soil disturbed by cattle left few establishment sites for this species and overall vegetation cover was minimal. Overall habitat condition declined between 2005 and 2009 (Figures 25 and 26). The rangeland health assessment of the uplands near this population showed increases in annual forbs and decreased perennial grass production. Livestock were present at the time of the August 2009 monitoring which may account for the disturbance observed in this typically late spring grazed pasture. In 2005 the use period started to extend from an April to early June use to an April to mid-July use. The later season use may be coinciding with the plants' development.



Figure 25. Population #2 in June 20, 2005.



Figure 26. Population #2 in August 4, 2009.

There is also one known population of Owyhee River forget-me-not located in these paddocks. As stated above, grazing impacts are not a threat to this species due to its remote and inaccessible habitat.

Pasture 4, C Paddocks (Late Spring Use)

Two populations of Bach's downingia are located in these paddocks (Table 33). These populations were assessed in 1992, 2005, and 2009. Population #3 is in a developed water source along Bull Gulch that has had little change in site quality over the monitoring period (Figure 27). Grazing impacts were moderate and population vigor was fair to good.

Table 33. Known Impacts to SSP Populations in Paddocks 4C1-4C4 of the JB&S Use Area, Big Springs Allotment.

Paddocks	Species	Best available information regarding impacts
C	#3, Bach's downingia	<p>1992-approximately 500 to 1,000 plants with vigor assessed as good, noted threats included grazing, trampling and road construction.</p> <p>2005 (surveyed a portion of this population)-approximately 1,000 plants were located with vigor assessed as good.</p> <p>2009 – 1,000+ plants, population vigor was good and habitat condition fair to good.</p>
C	#4, Bach's downingia	<p>1992-approximately 10,000 plants with vigor assessed as excellent.</p> <p>2005 (surveyed a portion of this population)-vigor assessed as good to excellent.</p> <p>2009 – approximately 500 plants with fair vigor and poor to fair habitat condition.</p>



Figure 27. Population #3 on August 4, 2009.

Population #4 spans both state and BLM land. The population extent is limited relative to the large amount of habitat available at this location. In 1992 approximately 10,000 individuals were observed during surveys. Population size decreased to approximately 500 individuals noted during a complete survey in 2009. The population was monitored in 2005 with 50 individuals observed. Disturbance from livestock is heavy here and the water level seems to fluctuate more than at other water sources where this species occurs (Figure 28). Species were observed high up on the bank and away from the more saturated soils. Livestock were present at the time of August survey. This pasture is usually managed as late spring season grazing. The surrounding vegetation was rated as having a slight to moderate departure from expected conditions during rangeland health surveys. An increase in annual forbs and decrease in perennial grass production has occurred at this site.



Figure 28. Population #4 on August 4, 2009

Pasture 4, D and F1 Paddocks (Early Summer Use)

Three populations of Bach's downingia are located in these paddocks (Table 34); two previously located populations and one new population located in 2009.

Table 34. Known Impacts to SSP Populations in Paddocks 4D1-4D2, 4D4-4D5, 4F1 of the JB&S Use Area, Big Springs Allotment.

Paddocks	Species	Best available information regarding impacts
D	#5, Bach's downingia	1992-approximately 500 plants with vigor assessed as good, noted threats included trampling and road re-alignment. 2005 (surveyed a portion of this population)-approximately 1,000 plants with vigor assessed as good. 2009 – 2,000+ plants with good vigor and fair to good habitat condition
D	#6, Bach's downingia	2005 - numerous flowering plants observed. Mechanical damage was observed in the dried clay where the plants were growing. 2009 – 1,000+ plants. Population vigor and habitat condition were fair to good.
D	#7, Bach's downingia New population at Yellow House Reservoir	2009 – Approximately 400 plants observed on margins of reservoir. Deep trampling of soils and roughly 25% of plants partially consumed by livestock. Overall poor vigor and habitat condition.
D (WBB)	#1, Thinleaf goldenhead	1995 - several hundred plants with vigor assessed as good. 2012 – Less than 50 individuals

Population #5 is located on dried clays in a drainage bottom (Figure 29). This population was assessed in 1992, 2005 and 2009. Although mechanical damage at this site is heavy in places, this population is persisting (Figure 30). Population counts for this population have increased since 1992, from 500 initially to greater than 2,000 in 2009, possibly as a result of increased survey time and area. Rangeland health assessments from the surrounding area indicate that undesirable species such as bulbous bluegrass are increasing and that plant vigor is less than expected for the site.



Figure 29. Population #5 on August 4, 2009



Figure 30. Population #5 on August 4, 2009

Population #6 is located north of this occurrence in a dry, rocky channel within a vernal wet silver sage playa. Mechanical damage was noted at this location, however numerous flowering plants were observed. More than 1,000 individuals were observed during a 2009 visit. This population is close to a

developed water source and therefore receives heavy use with extensive pugging in the habitat (Figure 31). Population vigor was fair to good and habitat condition fair to good.



Figure 31. Population #6 on August 4, 2009.

A new population (#7) was located along the edges of the water source near population #6. Approximately 400 individuals were located in the heavily pugged soils around the water (Figure 32). The vigor of Population #7 was fair to good and habitat condition was fair. This paddock is typically grazed in early summer (out by mid-July) but in 2005 and 2006 part of the herd was kept here until October. Livestock were present during early August in 2009. Rangeland health assessments showed an increase in undesirables such as bulbous bluegrass.



Figure 32. Population #7 on August 4, 2009.

There is also one population of thinleaf goldenhead located within the Wagon Box Basin Pasture 4D3. This population was occupying the rocky openings of a mountain big sagebrush community (Figure 33). This plant typically grows in grassy springs or streambanks, and wet or dry meadows up to 8,200 feet in elevation. Without flowers, which typically appear from May to August, this plant is difficult to locate (particularly if the area has recently been grazed). Thorough inventories for this species have not been conducted and because it is easily overlooked it is possible that this species exists at other undiscovered sites in the area. During an initial site visit conducted in 1995, several hundred plants were located and the population vigor was assessed as good. In 2012 the population was assessed as having good vigor but low population numbers with less than 50 individuals. The rangeland health assessment for the Wagon Box Basin shows a slight to moderate departure from expected conditions. Pedestalling of grasses, plant mortality, and bunchgrass crown die-out were higher than expected. This suggests less than optimal habitat conditions for thinleaf goldenhead.



Figure 33. Population #1 of thinleaf goldenhead in Wagon Box Basin, 2012